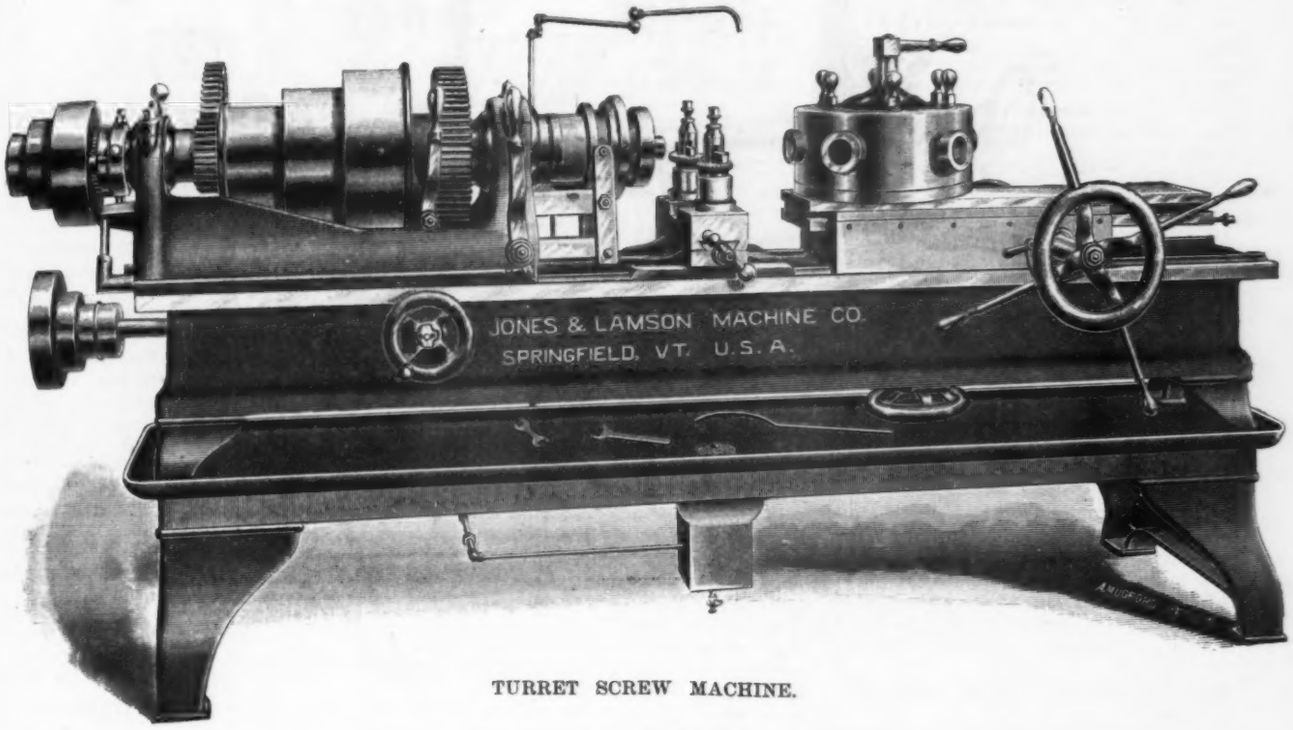
THE IRON AGE

THURSDAY, JULY 24, 1890.

Turret Screw Machine.

The builders of this tool, the Jones & Lamson Machine Company, of Springfield, Vt., state that it is the largest turret screw machine ever built. It is especially adapted for the heaviest work of stationary, locomotive and marine engine building, also general lathe work and chucking of a heavy character. It will easily do work from the continuous bar up to the limit of its spindle hole, and chucking up to the limit of its swing. It will take in stock up to 3¼ inches, and is suitable for cutting threads with a die up to 2½ inches in diameter. The machine is furnished with a patent roller feed and automatic chuck which handles square, hexagon and round stock equally well up to the limit of its spindle hole. This is operated while the machine is running, and when thus fitted will do from 15 to 25 per cent. more work per day than a machine without it. The turret revolves automatically with the backward travel of the slide, and is provided with a patent power feed. The power is transmitted to the feed rod by a belt running on cones with three grades which give the full range of feed ever required. The curved lever, just back of the pilot wheel, is for throwing the power feed of the turret into and out of gear, and is provided with the new knock off that can be quickly adjusted so that it will mill or drill to any point of its milling length with great accuracy. The carriage, or cut off rest, has a reversible lateral power feed with three changes and may be used for turning like the carriage of a lathe The hand wheel with nut, shown in front at the left, enables the operator to throw this feed out and in and reverse or feed by hand instantly. The carriage is, therefore, operated like that of an engine lathe in all respects, which is eminently convenient. The cross slide is worked by a screw with ball handle, and has a tool post in front and behind the work. These two tool posts have elevating collars for the accurate adjustment of the tools. The spindle is provided with back gears, applied by a clutch, operated while the machine is running. The great saving in time accomplished by thus being able to change from high speed used in turning to a slow speed used in cutting a thread, and conversely, will be seen at once. A rotary pump takes the oil from the drip-pot beneath and throws it in a steady stream wherever the operator desires, making the highest cutting speeds practicable. The drainage pan is extra large to hold all the chips accumulated during the day. The principal dimensions are as follows: Diameter of turret, 16½ inches; swing, 24 inches; milling length, 15 inches; bed length, 8 feet 7½ inches; bed width, 15½ inches; weight, 5500 pounds.

The chasing attachment is illustrated by the outline drawing. The chaser is the quickest means of cutting a perfect thread, as reversing the motion is done away with and the time lost in running back on an ordinary engine lathe is saved. When the desired length of thread has been cut by lifting the arm which carries the tool, the nut or follower is released from the leader and a spring returns the bar to its original position, when the tool is ready to cut anew. Taper and special threads are done more accurately with this tool than in any other way, as it is capable of the finest adjustment. It is also used for roughing extra heavy threads that are to be sized with a die. The chaser bar is placed just behind the bed, a position giving much greater stiffness than if it were placed above or in front. It is supported by three substantial bearings which give it great strength. The leader runs on a stud at the left end of the head; it is geared from the spindle, so that the threading tool cuts two threads to one on the leader. The arm, which carries the threading tool, is pivoted on the chasing bar between two of the bearings, and it can be set on it at any desired position by a binding screw. Its position between two bearings gives it a support on both sides and it easily resists any strain brought upon it. When not in use this arm can be thrown back in an instant, where it is entirely out of the way. The slide block to the threading tool is operated by a screw with ball handle and has a stop that can be quickly set for any depth of thread. The handle at the end of the arm is pivoted and has a lip which bears on the under side of a bar on the front of bed. By this means, together with the correct angle at which the threading tool approaches the stock, the point of the threading tool is easily held down to the work. This attachment is substantially built and fitted throughout with great care.



TURRET SCREW MACHINE.

The Drawback on Barb Wire.—Under date of June 18, George C. Tichenor, Assistant Secretary of the Treasury, addressed the following letter to the Collector of Customs at New York: "On the exportation of barb wire fencing, manufactured by the Iowa Barb Wire Company, of Allentown, Pa., wholly from imported steel rods and spelter, a drawback will be allowed equal in amount to the duty paid on the imported materials used in the manufacture, less the legal retention of 10 per cent. The quantity of such materials will be ascertained by allowing $4\frac{3}{16}$ pounds of spelter, and $102\frac{3}{16}$ pounds of rods, for every 100 pounds net of the exported articles.

Buffalo has no reason to feel disappointed over the results of the census. That city's population of 250,122 is a gain of 95,000 in the last ten years, and leaves Buffalo still close on the heels of Cleveland. The latest returns indicate that the population of Chicago is almost certain to reach 1,100,000, and that there is no longer room for doubt that the Illinois metropolis has become the second city of the United States, in population as well as in business prominence. Wilmington's population is 61,275, an increase of 18,797 since 1880.

The Flow of Metals and Its Relation to Testing.

BY P. KREUZPOINTNER, ALTOONA, PA.

On Elongation.

With few exceptions all metals elongate more or less when subjected to stress. After straining to a certain point and subsequent removal of the load, the metal returns to its original form or length. The point within which a metal reassumes its original form is called the elastic limit. In other words, metals are elastic in the same sense as we speak of rubber being elastic. The difference consists in the degree only of the elasticity of these substances. Within the elastic limit of a metal its rate of flow, which is indicated by the amount of stretch within a given distance, is extremely small, measurable only by so many tens of thousandths of an inch. As soon as the elastic limit is reached and the stress continues to act in the direction of the length of the metal, then the flow becomes more rapid and perceptible, the metal elongating by hundreth and finally by tenth of inches until rupture takes place.

Those who consider iron and steel as the ideals of strength, rigidity and immovability, would, no doubt, often be surprised to see what small a force is really required to cause movement of the molecules of metals. May not the well-known phenomenon of the creeping of rails on bridges or down grade be largely due to that elasticity of steel which, if exerted only to a given degree, may be repeated millions of times without injury to the metal? How small a force may cause movement in the molecules of even hard steel is well exemplified by the following incident:

A test piece cut from a bar of spring steel; section 10 inches between fillet; sectional area 0.389 fitted up with micrometer and electric bells, was ready for test but had to be laid aside to give preference to some other test. Some one, in order to explain to some visitors the manner of making a tensile test, picked up the test piece and pulled with his hands on each end. On letting go again of the test piece the electric bell began to ring, showing that the test piece could be stretched sufficiently to cause elastic reaction making electric contact and ringing the bell. Of course the occurrence caused surprise, but since everybody present, and those coming into the room during the day, had to repeat the experiment and pull at that test piece *ad nauseam*, there remained no doubt that even the few pounds of force exerted with one's hands by pulling at a bar of spring steel 1 inch wide and 0.389 inches thick caused the molecules of the metal to move and flow.

This fact, if kept in mind when designing and constructing, making steel for such purposes where with great strength a certain amount of ductility—that is, flow of the metal—is to be combined, or when investigating "mysterious" breaks, will often furnish the key to an explanation of what ought to be or ought not to have been done. That superintendent's head was level, therefore, who refused to make steel of 0.60 carbon for a certain purpose when he knew that a class of steel with 0.45 would answer much better, because in the latter, while getting the necessary strength, he also got a little flow of the metal, just sufficient to "cushion" the ramlike forces which the steel had to withstand, thus preventing breakage. In the 0.60 carbon steel he would have had a maximum of stiffness coupled with a minimum of that ability to yield at the proper moment which must characterize all metals subject to sudden shocks and variable stresses. It is just in such cases where the most intimate knowledge of the nature of materials becomes of the greatest advantage, and where too much reliance on mathematical formulæ and established rules may lead to disastrous consequences on account of the too prevalent notion that the properties of metals are a fixed quantity and can be solved like a proposition in Euclid.

If the load or stress applied exceeds the elastic limit the metal begins to flow visibly. It is the rate of this flow, expressed in so many per cent. of elongation per inch of section, which is usually taken as a criterion of the ductility of a metal. The confidence with which the per cent. of elongation as a measure of equality is accepted by the engineer is well founded, provided, first, that care was taken to eliminate as much as possible from the results of tests the retarding and disturbing influences of heads and fillets, and, second, that observations have been made whether the stretch—that is, the flow—was uniform or took place in "starts" and "fits." If the flow is uniform, then the measurements of the rate of flow expressed in hundredths of an inch and measured from the distance mark to the point of rupture, present a regularly ascending scale, as shown in the table below:

Rate of Flow of Soft Steel in Hundredths of an Inch.

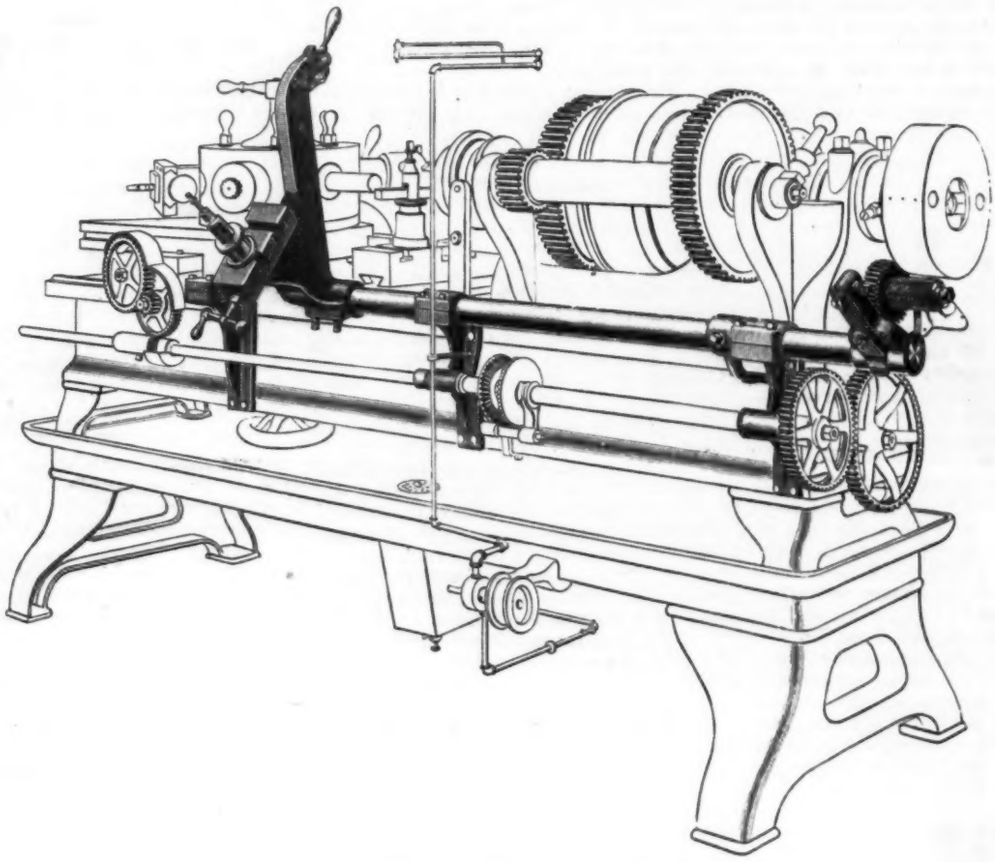
1	1	2	2	3	3	3	3	3	4	4	4	5	5	6	6	7	9
14	19	Total, 1.04 inches.															

On the contrary, if the flow proceeds in "starts" and "fits," the measurements will be very irregular, as shown in the second table, though the total elongation is considerably more than the first case:

Rate of Flow of Soft Steel in Hundredths of an Inch.

1	2	2	3	2	3	2	18	5	2	7	8	7	8	3	11	
34	64	Total, 1.82 inches.														

The question will naturally be asked: What reason is there for this striking dif-



SCREW MACHINE WITH CHASING ATTACHMENT.

ference in the same classes of metals? To what extent does this difference affect the quality of the material? It must be confessed that these questions are more easily asked than answered.

Sufficient attention has already been paid to the restraining influence of heads and fillets on the free flow of metals, and no more need to be said in regard to this point, except that engineers counteract these disturbing elements as much as possible by interposing an extra length between the distance mark and beginning of the fillets. Thus, in an 8-inch section, the total length is ordinarily 8½ inches between shoulders. By lengthening the straight part of the test section at each end ½ inch between mark and fillet, the total length of the straight portion becomes 8½ inches, thus getting rid of the disturbing influence of the fillets. In German and Swiss Government specifications this extra portion is taken at 10 mm. (⅜ of an inch).

Under the most favorable circumstances, however, the stretch of a metal is found greatest near the point of rupture, diminishing more or less uniformly toward the head in the case of a test piece, the eye in the case of an eyebar, the joint in the case of riveted plates, &c. An ideally isotropic material is never met with. The reason for this want of equal extention of a metal in all its parts is probably found in the want of complete homogenity. There are blowholes, laminations, hard and soft places, effects of unequal cooling, &c., in the best of them, especially if produced on a large scale in commercial quantities.

If the rate of extension or flow is as uniform as given in the first table, then this is all that can reasonably be expected. An explanation for the irregularity of stretch, as exhibited in the second table, is probably found in the structure of iron and steel.

It is well known that these metals consist of two essentially different substances. One of these two bodies is softer than the other one, and, generally speaking, in proportion as the one or other of these bodies prevails, a metal is harder or softer, stronger or weaker, brittle or ductile. Wedding and Martens call these different bodies crystalline and "homogene" iron, considering, in this instance, steel merely as a highly carbonized iron. The greater the proportion of the soft or "homogene" portion of the iron or steel, the lower its elastic limit and strength and the greater its flow and ductibility, and consequently also its stretch.

The observation has been made that whenever the soft portion of the metal prevails there is a tendency to jerky and irregular flow. When closely observing such metal under stress, the impression is made as if the metal wants to brace up to renewed resistance to the pulling force; failing, it is jerked again a greater or less distance; then braces itself again, repeating the performance until rupture takes place. An explanation for this phenomenon is probably found in the metal becoming denser at different places, when the flow is momentarily arrested or slowed up until an increase in the pulling force causes a renewed flow. Thus actually several "heads" may be formed during the progress of a tensile test of soft material, especially soft, homogeneous steel, such "heads" assuming the function and characteristics of the heads on either end of the test piece. It is well to keep this in mind when seeking for a reason for the well-known fact of an increase of the elastic limit and strength of a metal after having been strained beyond the elastic limit and then allowed to rest.

As to the quality of a metal which exhibits the irregular flow as described above, it may be excellent metal for all that. Only for certain purposes, however, can it be safely used. For any purpose where a material has to sustain sudden shocks, trusts, twists, or changes in temperature, such soft metal is not at all recommendable, because, its elastic limit being low, the metal, if it should receive a sudden impact which is greater than its elastic limit, will stretch too much before it has reached a point of density which allows it to form a new point of resistance, and subsequently a new elastic limit. In other words, the metal is fatigued beyond the point of recovery and detail fracture is the consequence.

Right here it may be in place to call attention to the practice and inclination of some over zealous engineers to take test pieces from objects which have already been under strain in one way or another. If the results of such tests serve only to show the changes a metal underwent while performing "work," then there is no objection. But whenever test pieces are taken from a broken axle, tire, beam, eyebar, &c., and the results of these tests are assumed to represent the natural conditions of the metals as it comes from the mill, then such practice is not only unjust to the steel maker, by trying to impose conditions on him which he may not be able to fill to the advantage of the consumer and his own reputation, but they are misleading in the the highest degree, and must, if taken as a basis for specifications, sooner or later lead to disastrous and disappointing results. It may safely be said that any part of an object which has been strained until rupture took place, was strained beyond the elastic limit.

Consequently the whole structure of the metal has been changed by the metal flowing and becoming more dense in places, whereby, of course, its nature has been changed and something entirely different from what it was before has been produced. Even in a bending test the metal on the convex surface of the bent piece flows at such a rate as to equal the rate of flow in a tensile test—that is so say, the elongation measured on a previously given distance around the curved surface of a bent test piece generally equals the elongation of a similar distance on a tensile test. It is clear that the change of structure which thus takes place in a test piece also takes place in any part of a structure which is similarly strained; only, if it were possible and practicable to strain every sheet, axle, tire, eyebar, beam or bar, before being used, to the same degree as the material was strained by bending or otherwise, then it would be fair, sensible and reasonable to use test pieces from such overstrained material and consider the results of such tests a criterion of equality. This matter being of sufficient importance to warrant a recapitulation of the points made, it is well to remember, whenever the question of equality of materials is under advisement, that the rate of flow of a metal, and consequently its ductility and ability to stretch or elongate, are by no means such a fixed quantity as could be determined like a mathematical proposition.

It is also essential to know whether the rate of flow progresses uniformly or in "fits and starts" when the metal is under strain, and to take into consideration that molecular movement takes place through the whole mass of a metal when under strain (except in such portions which are under the influence of artificial restrains as of heads and fillets). The effects, therefore, of sudden impact, shocks, bending, &c., which strain the metal to or near the point of rupture extend through the whole of an axle, bar, beam, eyebar or other structural member, and produce a condition in the metal which makes it something different from what it was before it was strained. The writer, therefore, takes the liberty to repeat that the taking of results of tensile test of such overstrained material as a basis of equality for other structural material is a serious self-deception and costly error. Years of experience, careful study of the properties of iron and steel, and the experience of the best authorities on the physical equalities of metals bear the writer out in his conclusions.

From all that has been said in the foregoing the conclusion is that the degree of ductility and elongation of a metal depends on the rate of flow of that metal, and consequently the proper interpretation and economical application of the results of tests not only depends on knowing the percentage of elongation in a given distance of the test piece, but it is also essential to know with what degree of uniformity the metal flows under a regularly —that is, steadily increasing load; and lastly, what causes, artificial or natural, may influence the rate of flow. To the possible objection to this reasoning, that the engineer cares chiefly for the qualities of the material within the elastic limit, the answer is pertinent that, first, a metal's qualities within the elastic limit are determined with more or less difficulty and uncertainty, and, second, that it is more than reasonable to suppose that the nature of a metal which determines its qualities outside the elastic limit also determines its qualities within the elastic limit. In other words, a metal which flows "jerky" beyond this important point is not likely possessed of ideal uniformity within the limit of elasticity. The fact is, and every close observer of the properties of iron and steel will agree with the writer, that it is the hardest thing to determine the elastic limit of such metal, requiring extreme care and attention. This is due to the ease with which such metal flows under comparatively light loads.

A correspondent at Kokomo, Ind., furnishes an interesting item relative to the manufacturing growth of that enterprising city since the development of its natural gas. Some 22 factories have been erected, each employing from 15 to 500 men, making an aggregate of 2555 hands, and a capitalization invested of $1,715,000. Among these new industries are a plate glass works, a safe and range works, machine works, boiler works, bit and edge tool works, knife and shear works, art glass works, tile works, &c. Street railways are about to be built, a new system of water works has been put in use, and the streets are lighted by both electricity and gas.

The Sims-Edison electric torpedo boat was tested at Willett's Point, last week, in the presence of many official spectators. The torpedo sent out consisted of two parallel parts, one above the other, about 6 feet apart and about 30 feet long. The lower portion was a cylinder with conical ends covered with copper. Inside the shell, beginning at the forward end, were three sections, containing 250 pounds of sand, used instead of dynamite, the controlling cable over 1 mile long and about ⅛ inch in diamer, made of fine twisted copper wire, which was paid out as the torpedo advanced, and the electric motor and steering device. The upper part consisted of a boat or float with a copper hull. The torpedo when lowered from the pier into the water was almost entirely submerged, only a portion of the upper half showing above the water. The time of the mile run was made under 1000 volts pressure in 2 minutes and 59 seconds, establishing the claim that the little destroyer can approach a hostile ship at a speed too great to be seriously exposed to the fire of secondary batteries. The float was at no time exposed more than 1 inch above the water. The new boat which the company are building for the Government is larger than the one above described.

THE MANNESMANN PROCESS.

A Revolution in Rolling.

About two years since German newspapers announced the discovery of a method of rolling solid pipe, which claimed a good deal of notice on account of its novelty. The principles underlying the method were alluded to, but no very satisfactory descriptions reached the public. Soon after, however, paragraphs appeared in some of the German trade papers throwing doubts on the practicability of the method, in spite of the fact that some of Germany's leading authorities were known to be sanguine concerning its future. It is now pretty thoroughly understood that the inventors passed through a series of trials and tribulations, and that they had to overcome difficulties in practical details which were exceedingly great. Now, at last, we have a good account of the methods employed, the special devices developed and the results achieved, from the able pen of Professor Reuleaux, of Berlin, best known to the majority of Americans as the German Commissioner at the Philadelphia Exhibition, and the man who pronounced the famous "Billig und Schlecht" in condemnation of much in the German exhibits at the Centennial.

Professor Reuleaux read a paper before the "Verein für Eisenbahnkunde" on the Mannesmann tube rolling process, from which we take the following explanation of the method:

If *a* Fig. 1 is a driving friction wheel, *c* will be rotated and at the same time driven axially, the speed of the entire movement depending upon the angle *α*. The same effect can be produced in even a better manner by allowing two friction wheels, *a* and *b*, Fig. 2, placed opposite to another, to act upon *c*. The axle of *c* is then no longer in danger of being bent by the pressure. The driving wheels *a* and *b* must be rotated in the same direction with equal pressures, and must be placed at the same angle to the axis of *c*. Let the shaft d^2 be provided with collars, through which it has a tendency to take along the bearing. Let this bearing be pressed between two guides, so that there is some friction when it tends to move from right to left. The consequence will be that the rotation of *c* is still possible, but that the axial movement is obstructed. This creates, on the surface of *c*, a driving tendency as a result of the friction of *a* and *b* and *c*, the effect of which is to cause the surface particles of *c* to flow in the direction of the axial movement. Now if the substance of which *c* is made is yielding, such a flow of the particles of the surface does actually take place. This is the principle of the Mannesmann "skew-rolls," as Frederick Siemens has called them in a paper before the British Society of Arts.

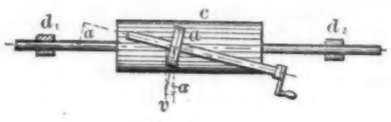


Fig. 1.

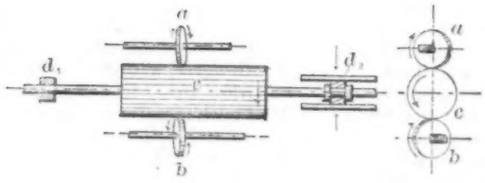


Fig. 2.

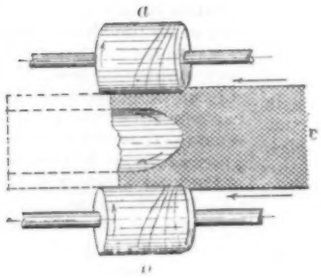


Fig. 3.

Fig. 3 is a sketch of the application of the principle to rolling. In the place of the disks *a* and *b*, in former figures steel rolls *a* and *b*, Fig. 3, are employed, the back parts of which are spirally roughened in order to increase the friction. The billet or bloom, heated to facilitate the flow, is brought between them. It is kept from falling out by guides. By driving the rolls the billet is rotated and is axially driven from right to left, on the principle explained in Fig. 1. The brake action of Fig. 2 is still missing. This is obtained by conically turning off the back end of the rolls and placing them so close together that the billet must first be reduced in size before entering the rolls. In this manner a shoulder forms on the billet which presses against the conical ends of the rolls, and thus has a tendency to retard the axial movement of the billet. The result is that the surface of the billet is really pushed forward more rapidly than the billet, as a whole, and that therefore a cup shaped cavity must be formed in the billet at the point at which the rolls take hold. As the billet follows up the cup formation goes on. Meanwhile the edge of the cup reaches the forward smooth part of the skew rolls and is polished. It is then that the tube dotted in Fig. 3 is formed.

The process must be considered as proceeding very rapidly. Great speed is necessary in order to prevent cooling of the billet during the rolling. Professor Reuleaux pronounces the moment when the last end of the billet is converted into a tube a remarkable sight. A point of light appears at the end of the billet, rapidly enlarging to a glowing circle. The solid billet is thus converted into a tube, the operation being called by Mannesmann the "blocking" of the tube. The inner surface of the "blocked" tube is nearly smooth, much more uniform than would be supposed.

It has been pointed out that the billet is held back by the conical end of the rolls, through the action of the shoulder formed.

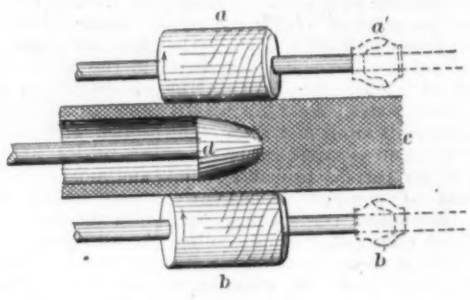


Fig. 4.

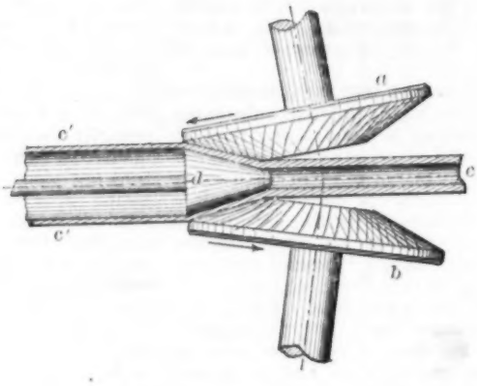


Fig. 5.

THE MANNESMANN PROCESS OF ROLLING.

If this braking is not done the cupping ceases. This may be taken advantage of to produce tubes closed at the ends. All that it is necessary to do is to point the end of the billet so that it is not caught by the rolls. The same thing may be done at the forward end. In this manner a tube may be produced closed at both ends. These have been frequently made by Mannesmann. It was interesting to learn what were the contents of this central hollow space. Prof. Finkener found that a cavity of 123.4 c. cm. contained 9.11 c. cm. of gas, consisting of 99 per cent. of hydrogen and 1 per cent. of nitrogen, a result which supports Mueller's well-known views.

The method described of holding the tube back by conical ends of the rolls is not always convenient, particularly in those cases where the obliquity of the rolls must, for some reason, be made very great. Therefore, another method is occasionally employed. A mandrel is adopted. Fig. 4 shows the application. A rounded mandrel, *d*, which can be rotated on its rod is opposed to the advancing billet at the point where the cup-

ping begins. By means of a hand wheel and screw the mandrel is advanced to the point best suited to the progress of the rolling. The mandrel, which is loose upon the square end of the rod, drops off as soon as the tube is completed. Then the rod can be withdrawn. The rolls are driven by means of couplings at a' b', which permit of an adjustment of the position of the rolls, as to obliquity of position and their approach. It is clear that the thickness and diameter of the tube, aside from the dimensions of the billet, depends largely upon the position of the rolls. In fact, with the same set of rolls, very thin and very thick tubes can be made.

material in. The tube emerges widened, and thinner at c.'

"Blocking" train and the "disk" train are the two most important, and those principally used by Mannesmann. One of the objections promptly raised against the method was the enormous power required to do the rolling. While this is true, it is due to the fact that the whole process of shaping with its enormous displacement of material must be done in a very short time. The question arose how to store the necessary power in the fly wheel for the relatively brief period of rolling. That could only be done by increasing the capacity of the fly wheel to accumulate power. The ordinary fly wheels

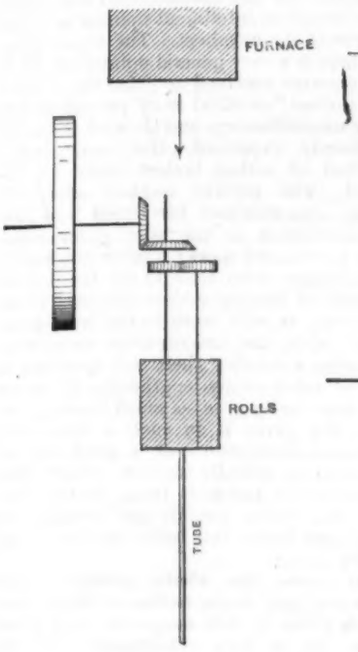


Fig. 6.

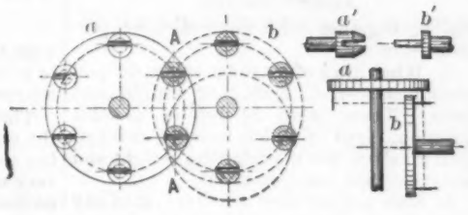


Fig. 7.

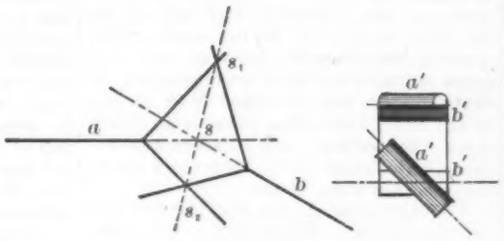


Fig. 8.

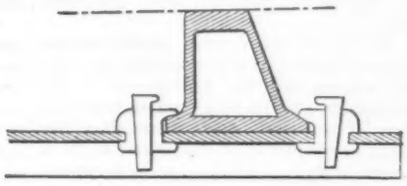


Fig. 10.

Fig. 9.

THE MANNESMANN PROCESS.

Tubes rolled in this way may be widened out by reheating them and again introducing them between the rolls after correspondingly changing the position of the latter. Greater enlargement is preferably carried out by Mannesmann by a set of disk rolls, shown in Fig. 5. The rolls are disks a and b spirally roughened. They revolve at equal speed in opposite directions, so that the tube introduced between them is rotated, and at the same time is pushed forward through the friction of the roughened faces of the disks. The mandrel d aids the operation, its shape being so chosen that between it and the disks there is room for a conical body of material decreasing in thickness. Rolling takes place between a and d and between b and d. The tube c is rolled between what may be called three rolls, the disks and the mandrel, the spiral roughening of the disks crowding the

do not admit of going above a certain limit for circumferential speed. At Komotau, Austria, a wheel of the ordinary design was destroyed, having been run at a little more than 120 feet a second. The result was a special design of a fly wheel, which is very interesting. As described by J. G. Gordon before the Society of Arts, this wheel consists of a cast iron hub, to which are securely bolted two disks of steel plate about 20 feet in diameter. Around the periphery of the wheel thus formed about 70 tons of No. 5 wire are wound under a tension of about 50 pounds, thus binding the whole securely together. Mr. Gordon remarks that there can be no comparison between the resistance to centrifugal force of a wheel so constructed and that offered to this force by a cast iron one. This fly wheel of 20 feet diameter and weighing 70 tons revolves 240 times per minute, therefore the periphery of the wheel has a speed of 2.85 miles per minute or 171 miles per hour.

According to Mr. Gordon the power required to produce the tubes is very large, something like from 2000 to 10,000 horsepower, according to the dimensions of the tube. If a steam engine of this power had to be provided for each rolling mill the plant would, of course, become extremely costly, but, luckily, this great power is only required for a short time. Thirty to forty-five seconds suffice to convert a bar 10 to 12 feet long, and 4 inches in diameter, into a tube, and then some time elapses while the next bar is brought up, adjusted in the guides and the finished tube removed. During this time energy is accumulated in the fly wheel of the design described, and by this means a comparatively small steam engine of about 1200 horse-power is quite sufficient to do the work.

A second serious obstacle to regular practice, particularly for larger mills, was the defects of the ordinary tooth gearing. Their use was necessary, on account of the arrangement of the plant. In order to convey the heated billets from the furnace to the rolls conveniently, the plan had to be abandoned to place the shaft of the fly wheel in a line with the main shaft of the rolls; nor could it be placed parallel to it, because this was the direction which the billets took. The arrangement is shown in Fig. 6. The ordinary conical gears, even if made of steel castings and most carefully cut, did not resist the wear and the slightest inaccuracy told at the high speed, 300 revolutions per minute and upward.

To meet this difficulty Mannesmann Brothers designed a special form of gearing, shown in Fig. 7. The form of the teeth is shown at a' b'. They are so shaped that the one seizes the other like a fork. Considering first the two wheels in their position, with their axes parallel to one another, each having the same number of teeth, it will be seen that the forks and the blades must meet accurately, provided the teeth be always kept in a parallel position. In both wheels this parallel position of the teeth throughout their movement is maintained by a special appliance not shown. But the position of the axes of the two wheels may be swung at any angle provided the line A A, Fig. 7, remains vertical. In that manner an arrangement at right angles sketched at the right side in Fig. 7 may be attained. Professor Reuleaux states that these gears work remarkably well, when amply lubricated.

A third serious difficulty encountered by the Mannesmann Brothers was to couple the rolls with the driving shafts. In the simplest "blocking" train four couplings were necessary, two for each roll, allowing both for an adjustment in the angle of the roll and their approach. At the same time the rolls had to be driven very uniformly, on account of their high speed. They were again forced to resort to a special design, indicated in Fig. 8. Let it be assumed that two axles a and b, are provided at two points, equally distant from the intersection point s, with their arms, indicated in the sketch by lines. These arms inclose equal angles $s\ b\ s_1$ and $s\ a\ s_1$. Where the two axles are uniformly notched the touching arms will constantly remain in contact. After a revolution of 180 degrees the contact point at s_1 will reach the position of s_2. In doing so the contact point moves in the path of an ellipse. In order to carry out the idea of contact lines the edges could be made of steel blades. But this would lead to rapid destruction. Mannesmann employs in the place of blades a link consisting of two half cylinders, sketched in Fig. 8. They lie upon one another with their flat surfaces, while their round backs make the necessary angle movements in cor-

responding bearings. This coupling is said by Professor Reuleaux to be doing excellent service.

One matter to which Professor Reuleaux does not refer, but which is touched upon by Mr. Gordon, is the necessity of careful adjustment of the rolls. In the Mannesmann mills every part is as carefully fitted as in a locomotive or marine engine, and the screws and balances are designed to, and do, enable the foreman roller to adjust the rolls to the 32d of an inch.

The pipe as produced by the blocking rolls possesses peculiar properties. The forced flow of the metal groups it in spiral fibers, the pitch of the spirals being greater in the inner parts of the walls of the tube than in the outer walls. Professor Wedding has proven this by microscopical investigations. It is claimed that this structure imparts to the solid rolled tubes special strength, in fact, Professor Reuleaux states that they show five to six times the strength. He claims furthermore that this structure permits of special ease in further working in flanging, widening, &c. He raises another point, that the great stresses in the process of manufacture make the selection of sound stock absolutely necessary. Blowholes, irregularities, &c., in the steel lead to fractures in the rolling. For this reason wrought iron cannot be used, but copper, delta metal, brass and steel make good materials. The Mannesmann Brothers were forced to put up a crucible and an open hearth plant of their own, in order to ensure getting the right raw material.

There are four works in operation, producing Mannesmann tubes, the small experimental plant at Remscheid, Germany; one at Komotau, Bohemia; a small works at Bons, near Saarbrücken, Germany, and the large works of the Mannesmann Tube Company, at Landore, Wales. A fifth plant, for making copper tubing is being built by Gebrüder Heckmann, at Duisburg, Germany.

At the meeting of the German society referred to Professor Reuleaux showed a large number of specimens of pipe which are pronounced to be quite remarkable productions. He emphasized the value of the tubes for shafting, and showed some samples of subsequent shaping of the tubes. Thus he calls attention to hollow beams possessing a greater thickness of metal at the center, as in Fig. 9, and a rail of the form shown in Fig. 10.

As a new departure in rolling mill methods, the Mannesmann process is certainly deserving of attention. None of the published reports give any data whatever which might furnish a cue to the solution of the question whether it is as yet a commercial success, whether it can compete with the improved methods of manufacturing welded pipe developed in this country during the past decade.

Since the policy was adopted of using none but domestic steel in all the new ships in the navy, there has been a great advance in the art of making and working steel in this country. When that policy was first adopted, on an average less than 70 per cent. of the output of the various mills was able to pass the naval inspection. With increased experience has come the ability to do much better work, and Commodore Sicard, president of the Naval Board of Steel Inspection, said that more than 90 per cent. of the steel will now pass the most rigid inspection. The capacity of the steel mills of the country has greatly increased in the meantime, and a still further increase is to be made by the Bethlehem Iron Works, where the erection of the most complete plate rolling mill in the country is under way. This mill is to be able to turn out all kinds of shapes and angles, as well as plates of all thicknesses up to 6 inches. The armor plate plant erected by this company is about ready to begin operations. A few experimental plates have been forged already, but none which is intended for use on a vessel.

Safety Valves and Horse Power.

At the Pittsburgh meeting of the American Boiler Manufacturers' Association held in April, 1889, a committee was appointed to consider the subjects of safety valves and horse-power. This committee handed in a report at the convention held a few days since in New York. The committee sent circular letters to the members of the association on

SAFETY VALVES,

which, together with the replies we present below:

1. What kind of a safety valve do you recommend—*i. e.*, spring or weight and lever? There were 13 replies to this question, eight of which were in favor of spring valves, three preferring weight and lever and two non-committal.

2. State any peculiar construction of any parts which you may prefer, or any changes in the valves now in the market that you recommend. To this question we received 13 answers as follows: Nine express themselves as being satisfied with any of the first-class valves now in the market; one member recommends a flat seat; one suggests multiplying lever arrangements, so that the valve may be raised from its seat at any time, even when there is no steam upon the boilers; one recommends external adjustment to the valve, and one to use a hollow loose steam.

3. What metal do you consider the best for valve seats? The replies to this question were 11 in number, as follows: Seven members prefer brass or best steam metal; one each preferred nickel, hard composition, phosphor bronze and tempered copper.

4. What, in your opinion, should be the difference between the capacity of the safety valves and the boilers—*i. e.*, do you consider a valve large enough to discharge 50 per cent. more steam than the nominal horse-power of the boiler to be a sufficient margin, or do you recommend more? To this question we received a number of replies. Seven state that they think a 50 per cent. margin sufficient; one says 62 per cent. and one 60 per cent. Other members gave arbitrary sizes for valves for certain horse-power of boilers, and others still propose rations of valves to heating surfaces and grate surfaces.

5. Would you recommend the use of valves larger than 4 inches, or the use of two smaller valves giving the same capacity of release for sizes above 4 inches? The general opinion on this point is against using a larger valve than 4 inches; the replies being nine in favor of using two smaller valves and only two favoring the use of valves larger than 4 inches.

The committee feel justified in reporting on this subject as follows:

1. We recommend that the association adopt the spring loaded safety valve, and that all the members use such valves in their business wherever possible.

2. We consider any of the high grade valves now in the market as reliable, but especially recommend those which increase the area for release as soon as the valve leaves its seat.

3. We recommend that all boilers should be supplied with a safety valve or valves giving 50 per cent. greater release than the nominal power of the boiler, and as the speed of steam varies with the pressure, we insert below a list of sizes to be used:

For boilers rating at from—

10 h.-p. to 20 h.-p.....one 1¼-inch valve.
20 h.-p. to 30 h.-p.....one 1½-inch valve.
30 h.-p. to 40 h.-p.....one 2- inch valve.
40 h.-p. to 80 h.-p.....one 2½-inch valve.
80 h.-p. to 100 h.-p.....one 3- inch valve.
100 h.-p. to 125 h.-p.....one 3½-inch valve
125 h.-p. to 150 h.-p.....one 4- inch valve.

4. We would recommend that no larger safety valve than 4 inches be used under any circumstances, but that when a larger opening for the release of steam becomes necessary, two or more valves be used, of such size that their aggregate area is the area desired. We would further recommend when more than one valve is used that they be adjusted so as to open at different pressures, say 2 pounds difference between each valve, so that the shock on the boiler, caused by the opening and closing of the valves, may be reduced as much as it is possible.

The replies received by the committee to the questions relating to

HORSE-POWER

were too few and indefinite to enable them to arrive at an intelligent opinion as to the wishes of the members. The report says:

There is a very general opinion, as far as the answers received go, that the "heating surface" method as at present used is very unsatisfactory, and the wish is almost uniformly expressed that some better method of rating boilers might be devised. The present method offers too many opportunities for deceit and misrepresentation on the part of unscrupulous parties and works against the honest boilermaker who tries to put the desired amount of heating surface into such shape and size as will work to the best advantage, while his unscrupulous competitor, by using a smaller shell and crowding it full of tubes or by lengthening his boiler out does really give as much heating surface, but gives it in such a shape that although cheaper in cost a good share of it becomes actually useless, either from want of circulation or from the fact that the long tubes quickly get stopped up with soot before the boiler has been long under steam.

Of course the whole question of the power of any steam boiler is simply how much water it will evaporate in a given time. It is very unfortunate that the term horse-power was ever applied to steam boilers, but it seems like a useless crusade to undertake to override and do away with a term, however inappropriate, which has the sanction of such long usage behind it. The committee would therefore recommend the adoption by this association of one of the three generally recognized standards of horse-power, viz.:

The evaporation of 30 pounds of water per hour from and at a temperature of 212° F.

The evaporation of 30 pounds of water per hour from 212° F. into steam of 70 pounds pressure.

The evaporation of 30 pounds of water per hour from 100° F. into steam of 70 pounds pressure.

The second standard above named was selected by Committee of Judges at the Centennial Exhibition as the "Unit of Commercial Horse-Power," and the third was subsequently selected by the American Society of Mechanical Engineers.

It seems to your committee that both the above named committees erred in their selection and that the first named unit has more and stronger arguments in favor of its adoption than either. It is in the hands of the Association, however, to decide which, if either, of the above units it will select.

This point decided, the next step seems to be the establishment of some rate of evaporation per square foot of heating surface for each of the common types of boilers. Your committee has fortunately had access to a large number of tests, which have been under working conditions by disinterested parties, of all the more common types of boilers. From these tests, which have been carefully examined, your committee has acquired the information which justifies them in

recommending the following "units of rates of evaporation" all calculated from feed at 212° F. and atmospheric pressure:

	Pounds per sq. ft. per hour.
For plain cylinder boilers.....	4 to 6
For horizontal tubular boilers.	1.5 to 3
For upright tubular boilers....	3.0 to 4.5
For upright with submerged tubes boilers.....	3 to 5
For locomotive boilers.....	3 to 5

The above named units, taken in consideration with units of horse-power, gives us the number of square feet of heating surface effective necessary to develop a horse-power on each of the kinds named, viz.:

For plain cylinder boilers, 7 sq. ft. H. S., 1 H. P.
For horizontal tubular boilers, 12 sq ft. H. S., 1 H. P.
For upright tubular boilers, 8 sq. ft. H. S., 1 H. P.
For upright with submerged tubes boilers, 8 sq. ft. H. S., 1 H. P.
For locomotive boilers, 8 sq. ft. H. S., 1 H. P

Now, it is well known that some heating surface is much more effective, *i. e.*, does much more work in evaporating water than other surfaces differently located in the same boilers. There is no doubt but that a square foot of fire sheet surface in an externally fired boiler does much more work than a square foot of tube surface, and therefore it seems desirable and necessary for the association to establish certain arbitrary values for heating surface, varying according to its location in the boiler. If this is done, the next step is for the association to establish the rating or horse powers of all the sizes of the more common types of boilers which are being built, and also the advisable ratios of tube diameter to tube length, grate area to heating surface, and in fact to design and seal with its approval all the more common sizes of the various types built. This seems to your committee to be eminently proper, as we have already definitely specified, the material which may bear the stamp of the association and have established rules for riveting, staying and for the attachments.

As above stated, this committee does not feel at all sure that the remarks above made reflect the opinions of more than possibly a very small number of the members, it is, however, clearly the fault of the latter that the committee is in this situation; and, such being the case, we offer the above remarks for your consideration, discussion and amendment, and most urgently advise the appointment of another committee on this same subject of horse-power, with instructions to again make an effort to secure the opinions of the members on this point. The committee further expresses the hope that in case the above recommendation is adopted, that each member of the association will freely give his opinions on the matter at an early date so that the committee may have plenty of time to consider the replies, correspond with each other, and be in a condition to present an intelligent and satisfactory report, and one upon which the association can act, and, if adopted, take a firm stand.

(Signed) CHAS. F. FOSTER, Chairman.

A Big Propeller for the Lakes.—The big steel propeller Maryland, one of the largest boats on the lakes, was launched at Wyandotte, Mich., 12th inst. She was built for the Inter-Ocean Transportation Company, of Milwaukee, and will be the flag ship of their fleet of seven vessels, carrying iron ore from Escanaba to the rolling mills in South Chicago. She is 335 feet over all, 316 feet on the keel, 42 feet beam and 24 feet depth of hold. Her engines are of the triple expansion order, 22, 35 and 56 inches diameters of cylinders and 44 inches stroke of piston, with an estimated power of 1200 horses. Steam will be furnished by two steel boilers, situated on the main deck, each 14 feet 2 inches in diameter and 11 feet 6 inches in length, capable of sustaining a pressure of 160 pounds. Her sectional screw propeller is 13 feet 2 inches in diameter and 17 feet pitch. The propeller has a double bottom and will carry 1200 pounds of water ballast when running light. Her load displacement is 5050 tons and her carrying capacity is placed at 3500 tons, on a draft of 16 feet. She is constructed entirely of steel by the Detroit Dry-Dock Company, who also made her engine, boilers and screw propeller, and cost complete about $250,000.

The Iron and Steel Institute Meeting.

Americans will apparently do all the reading of papers at the forthcoming meeting of the Iron and Steel Institute in this country in October. A provisional list just published by the secretary of the Iron and Steel Institute is as follows:

"On American Blast Furnace Yields." By Mr. James Gayley, Pittsburgh, Pa.

"On Testing Materials of Construction in the United States." By Messrs. Hunt & Clapp, Pittsburgh, Pa.

"On the Manufacture of Steel in the United Steel." By Mr. Henry M. Howe, Boston, U. S. A.

"On the Thomson Electric Welding Process." By Professor Thomson, New York.

"On the Manufacture of Spirally Welded Steel Pipes in the United States." By Mr. J. C. Bayles, New York.

"On the Development of the Iron Manufacture of Virginia." By Mr. E. C. Pechin, Cleveland, Ohio.

"On the Use of Water Gas in the United States." By Mr. B. Loomis, Hartford, Conn.

"On the Coke Industry of the United States." By Mr. J. D. Weeks, Pittsburgh.

"On Recent Progress in the Manufacture of War Material in the United States." By Mr. W. H. Jaques, Bethlehem, Pa.

"On the Composition and Wearing Qualities of Steel Rails." By Dr. Chas. B. Dudley, Altoona, Pa.

Two papers, whose titles follow, are to be offered by members of the Iron and Steel Institute at the International meeting at Pittsburgh:

"On the Protection of Iron and Steel Ships against Foundering from Injury to their Shells, including the use of Armor." By Sir N. Barnaby, K. C. B., London.

"On the Recent Development of Marine Engineering." By Mr. A. E. Seaton, Hull.

Sir Lowthian Bell has also been asked to prepare a paper embodying his views on the present state of the iron manufacture.

On the whole the idea that Americans present reports relating to our industries is a good one for the visitors. To iron masters in this country it would probably have been more interesting to hear some of the great European authorities who are to come to this country. We understand that A. Thielen and Dr. Wedding will present papers at this meeting.

Tests of Aluminum Bronze.—A series of tests to determine the tensile and transverse strength, ductility, elasticity and compressional strength of aluminum bronze, under the auspices of the Government, was begun at the Watertown Arsenal in Massachusetts last week. The tests were private, not more than a half-dozen witnesses being present, including Colonel Flagler and Major Howard of the arsenal; R. C. Cole, an expert in metallurgy, representing the various companies interested, and J. H. Perry, passed assistant engineer of the United States Navy, the latter to report the results to Chief Engineer Melville of the United States Navy. The tests were made of the tensile and transverse strength only, and they were far more satisfactory than had been anticipated. The tensile strength was shown to be something over 90,000 pounds to the square inch, which is largely in excess of anything ever before shown. The transverse strength developed was 6600 pounds on a 1-inch square bar. This result is not equaled by any other metal, with the single exception of the finest quality of crucible steel.

New Application of the Archimedean Screw.

A new system for operating street railways, which may possibly become a formidable rival to the cable, has been patented by Giovanni B. Siccardi, the inventor of the scow-plow and a combination car brake and starter. That which is called Siccardi's new rapid transit system is a new application of Archimedes' screw. In a conduit beneath the car track, like that used for the cable, is placed a wrought iron tube with a stout worm, and in place of a grip is a shoe pushed forward by the worm and raised or lowered at the will of the operator by a vertical rod. To meet the difficulties of curves and grades the tube is broken up into short sections and jointed with beveled gearing. The tube is revolved by steam power applied at terminal and intermediate stations, and the rate of speed developed is determined by the diameter of the tube and the length of the spaces between the worm. A 12-inch tube with 7 feet spaces, making 120 revolutions per minute, will drive a car at the rate of nine or ten miles per hour, while an 18-inch tube with 9 feet spaces, revolving at the same rate, will give a car a velocity of 14 to 15 miles an hour. It is claimed that, while the cost of laying the tube will be no greater than that of laying the cable, the operating expenses will be 40 per cent. less.

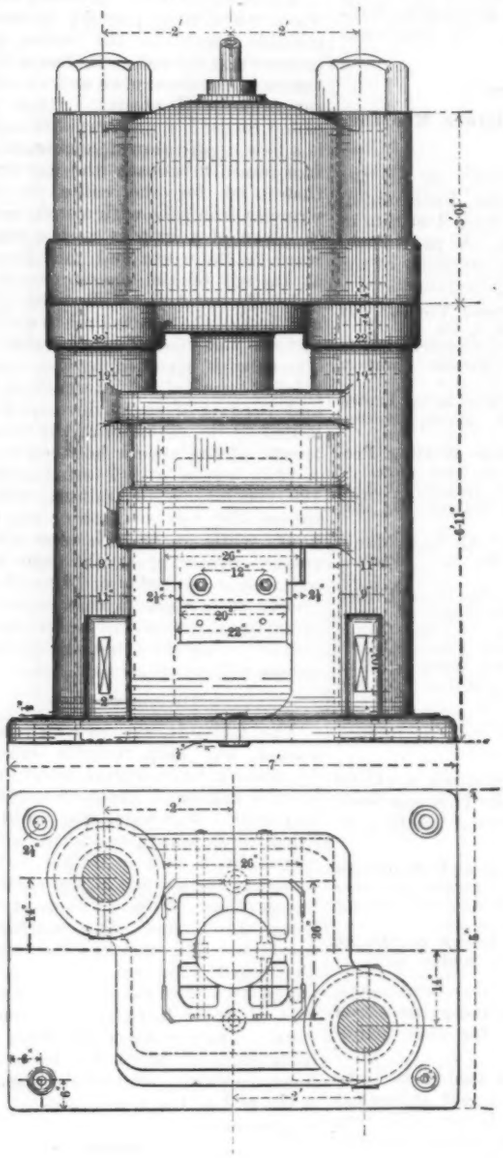
The Chiyoda, the new twin screw Japanese war ship recently launched at Clydebank, has a feature novel to her class in the matter of protection against shot and shell. The water line for about two-thirds of its length amidships will be protected by a belt of rolled steel plates bolted to the outside of the shell plating, the thickness of the steel side at this point being 4½ inches. The machinery and magazines and also the buoyancy of the unarmored ends are, in addition, protected by a steel deck with a mean thickness of an inch, extending from stem to stern. The plating of this deck is in two thicknesses or layers, the lower being of Siemens-Martin steel of the same quality as the rest of the vessel, and the upper of chrome steel.

The wrought iron pipe manufacturers in Pittsburgh are excessively busy. A special dispatch says the company which contemplates furnishing Chicago with fuel gas from the Indiana fields have been for several days vainly endeavoring to place an order for 300 miles of 6 and 8 inch wrought iron pipe with Pittsburgh manufacturers. The larger local mills are so overcrowded with orders that they had to refuse this big one. The National and Pennsylvania Tube Works, the two largest concerns of the kind in the world, would not touch it, and Spang, Chalfant & Co. would take but 30 miles. Orders for about 60 miles were placed elsewhere.

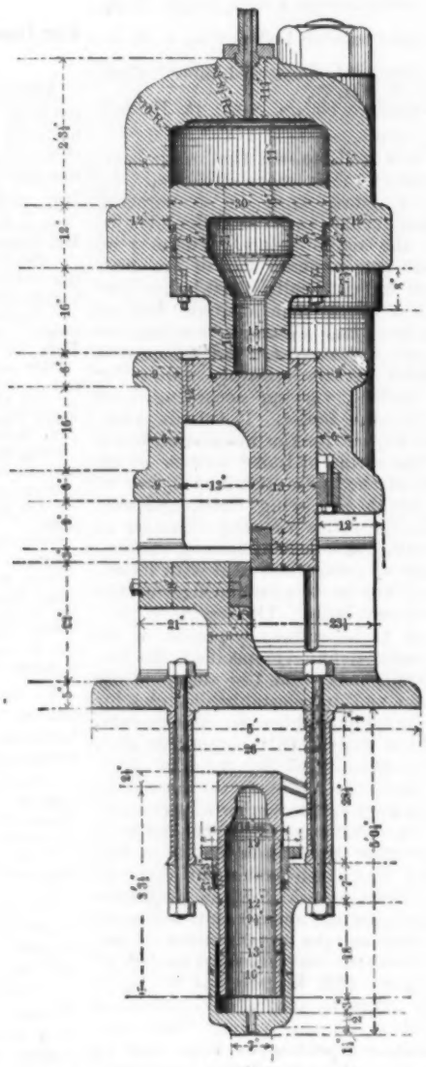
The Queen and Crescent Route has issued a supplement to Tariff No. 24, to take effect on July 21, in which the rate to Minneapolis, Minn., from Alabama points is fixed at $5.20, and from Dayton, Rockwood and Chattanooga, Tenn., to Minneapolis, $5.45.

Hydraulic Bloom Shear.

The accompanying cut represents the Aiken patent hydraulic bloom shear, which the Leechburg Foundry and Machine Company, of Pittsburgh, are building for the Belleville Steel Company, of St. Louis, Mo. They are also building an intensifier, for increasing the pressure from an ordinary accumulator to 2000 pounds, from which the shear receives its supply. The shear weighs about 60,000 pounds and works under a pressure of 2000 pounds per square inch, and will cut a section of hot steel 8 x 12½ inches. This shear has many advantages over the steam bloom shear now in general use. The principal features are its greater capacity than the steam shear for the same dimensions and weight and its simple construction, thus avoiding the many small parts which are necessary in all steam shears, the high speed of some parts, the wear and tear, repairs and the many breakdowns which so often delay the whole steel mill. This shear differs from other hydraulic shears in having only two bolts which hold the principal cylinder to the main housing. The centers of these bolts are at an angle of 30° with the line of the knife edges as shown in the plan, thus giving more clearance back of the knife for receiving the bloom with crane or any other appliance. The knife holder is made of cast steel and is guided by the frame of the housing, as shown in the section. The plunger of the principal cylinder is not attached to the knife holder, but only rests on it, so they can be easily separated when it is necessary to put on a new gland or packing rings. The upward stroke of the knife holder and plunger is produced by the small cylinder, which is hung to the bottom of the shear by two bolts and connected to the knife holder by steel rods. This small cylinder is connected directly with the accumulator and works under low pressure. There is an automatic attachment between the knife holder and supply valve of the principal cylinder, so that the length of the stroke can be regulated to suit the section, thus saving time of making full stroke when cutting small sections.



Elevation and Plan.



Vertical Section.

HYDRAULIC BLOOM SHEAR.

An important decision has just been rendered by Judge E. Henry Lacombe, of the United States Circuit Court, the effect of which will be—if there is no reversal by the higher court—to throw open the manufacture of celluloid to the public. The case was brought two years ago by the Celluloid Mfg. Company against the Cellonite Mfg. Company with the result stated.

NEW PUBLICATIONS.

GEOLOGICAL SURVEY OF NEW JERSEY. Final Report of the State Geologist. Vol. II.; 642 pages; large 8vo.; cloth.

This volume contains a catalogue of minerals found in New Jersey by Frederick A. Canfield, A.M., E.M., and a catalogue of plants by N. L. Britton, Ph.D. They are both very complete and valuable for reference. The species and varieties and localities of minerals and plants are clearly indicated. The total number enumerated of plants in New Jersey is 5641.

CATALOGUE OF THE PRATT INSTITUTE, 1890-91. 96 pages; small quarto; 23 plates.

This institute for manual and industrial training, founded in Brooklyn, is conspicuous for the extent of its buildings and equipments and the practical objects of its establishment. Placed in the midst of 2,500,000 people, it affords an education for both sexes such as the needs of this vast community require. Its founder, Mr. Charles Pratt, of Brooklyn, still retains in his control the trusteeship of its affairs. The faculty, instructors and assistants number 100. The number of individuals enrolled in its various depart-

ments is 2274 for day and evening instruction. A new building, 165 x 200 feet, five stories high, is to be added the present year to the grand equipments of this institution.

NEW ENGLAND MISCELLANY.

The new push propeller steamboat, building at Pryor's Yard, City Point, Boston, is approaching completion. She is being built by Richard Smith, the expert mechanic of the Russell Paper Company, and is the result of a number of years experimenting. The propeller consists of two flat blades about 3 feet long by 1 foot wide, which are pushed back and forth on guides attached to each side of the dead wood by two engines of peculiar construction. There are two cylinders, each 3 feet by 3 inches, and each cylinder has two pistons, one rod working inside a hollow shaft, which governs the opening and closing of the propellers. They are to work alternately, in order not to communicate too much shock to the boat at once while under headway, and as each closes, the motion is so continued that additional momentum is given at the conclusion of the stroke. The engines are entirely original in design, and are constructed on a long iron bed in line with the keel.

A storage electric motor for running safety bicycles was successfully tried recently, and promises to be of permanent value. The motor is situated on the guard over the rear wheel, immediately behind the saddle, the power being communicated directly to the tire by means of a small leathern wheel. There are three storage batteries, one between the pedals and one on either side of the rear wheel below the hub, giving equal weight on each side. The circuit is completed between the storage batteries and the motor by insulated wires, while the brake on the motor is connected with the steering handles by a cord. The motor weighs 13 pounds, and the whole of the appliance about 50 pounds. The device is so managed that the pedals can be used in addition for hill climbing, and whenever increased speed is desirable. The storage capacity is for about 50 miles. The speed developed by the contrivance was from three to four miles an hour, but it is thought that this can be materially increased. The inventor is S. H. Barrett, of Springfield, Mass.

The Jewell Belting Company, of Hartford, Conn., are having a large call for their short lap oak belting. Among recent orders is one for the entire belting outfit of a large woolen mill in Caxias, Brazil, recently erected.

The Thomson-Houston Electric Welding Company, of Lynn, Mass., are building large works at Newark, N. J., which will be used principally for the welding of tubes. E. P. Ball, of Palmer, Mass., is the engineer, and furnished the plans for the new factories.

The latest electric device is for detecting fires. When the temperature of a room reaches a dangerous point the composition in the little button starts the bell ringing, and indicates the number of the room in the office. The alarm is kept up until the temperature of the room is reduced to below the danger point.

A corporation for the purpose of manufacturing, purchasing and selling steam boilers, tanks and other metal work and machinery in Boston, and entitled James Russell Boiler Works Company, was chartered July 15, with a capital stock of $10,000 in shares of $100 each.

An order from England for the Draper automatic sprinkler is being filled by the Dutcher Temple Company, Hopedale, Mass.

The Blake Mfg. Company expect to erect a large foundry at their East Cambridge plant in the near future. No definite plans have yet been made, but it has been decided to erect a large building near the site of the present foundry and build up on to the old building and then transfer the machinery into the new building, after which the old foundry will be torn down or made over into a machine shop. The new plant of the company recently completed is giving great success in regard to working of the different labor saving arrangements. The main building is 100 x 500 feet long, two stories, the second story being a large gallery running round the entire building. There are other new buildings outside, including a machine shop, pattern room, engine and boiler rooms, stove houses, &c. The Blake & Knowles interests were consolidated about a dozen years ago, and the company have works at East Cambridge and at Warren, Mass. The negotiations for the sale have been in progress for some time, and the sale is due, undoubtedly, to the desire of Mr. George F. Blake, head of the concern, to retire from active business.

The Thomson-Houston Electric Welding Company have built a machine especially for the welding of scrap steel to be drawn into fence wire. The Illinois Steel Company have tons and tons of steel rod scrap which they have been obliged to melt over in order to utilize it. The company invited the Welding Company to experiment with this scrap, which they have done successfully, and they will now build machines for practical work. These machines will yield the company $1200 advance upon rental, and a royalty of 1 cent per weld during the life of the patents. Other steel works than the Illinois Company are likely to use this process and to their own profit.

The Westinghouse Electric Company have issued a book, "Arc Lighting by the Alternating Current," on the same elaborate scale which characterizes its book on incandescent lighting. The embossed covers, the uniformly fine engraving and the illuminated initials in missal style are all in great good taste, and the text gives a clear explanation of the most recent use to which the vibratory current has been put.

No one supposes for an instant that the Washburn & Moen Mfg. Company propose the immediate abandonment of their Worcester establishment; they have merely thrown their anchor to windward. In two or three years more, business that would have constituted a great increase to the operations of the Worcester plant will be done in Chicago. The process of transfer—assuming a continuation of our present customs laws—will be gradual. The Chicago establishment will grow in size, filling more and more of the orders that the company receive, until by-and-by the Worcester establishment will be merely maintained to supply local needs, and then, when even this becomes too expensive a method, will be abandoned. This was the history of the National Tube Works—a Massachusetts corporation which gives employment in a single plant to a larger number of men than any other factory in America. They built up and developed their Pennsylvania plant and gradually abandoned their Boston establishment.

Norman L. Munro, of New York, has had built another steam launch, which, if accounts of her trial are true, is an extraordinary flyer. The boat is called the Norwood, and was built by C. D. Mosher, at Amesbury, Mass., where on a trial she is credited with doing 30 miles an hour, without developing more than 105 out of her possible 400 horse-power. Her builder claims that she can do 35 miles an hour. An entirely new idea is embodied in the boiler of the Norwood, and from that fact she has been erroneously called the New Idea. It is believed to be absolutely unexplodable, and the builder claims that when the fire is once made and the furnace doors closed combustion will continue unattended to for two hours. The ideas embodied in the boiler are Mr. Mosher's. He also claims to have hit on a new device for keeping the journals from heating. The trouble with the Now Then, built by the Hereschoffs, was that after running for a little while at a high rate of speed everything about the engine would heat up so that it had to be slowed down. The Norwood is a shapely launch, with straight stem, concave counter, covered with an awning about three-quarters of her length. She has a short flagstaff fore and aft, but no masts. Her dimensions are: Length over all, 63 feet; beam, 7 feet 3 inches; draft, 18 inches. The frames and gunwale are of oak, the former 8 inches apart and covered by an inner and outer skin of mahogany. The outer skin is ⅝ inch thick and the inner ⅝. Between the two skins is a layer of canvas coated with rubber cement. She has a triple expansion engine, with cylinders respectively 9, 14½ and 22 inches in diameter, capable of developing 400 horse-power. She also carries a blower, an exceptional appendage for a launch, and a donkey engine for running it. Owing to the peculiar construction of her boiler, some difficulty has been experienced in securing a certificate of inspection.

Five patents have recently been granted C. J. Van Depoele for electric coal cutting devices. The first covers in a reciprocating electric engine a shifting field of force, an iron plunger actuated by it and means for varying the magnetic relation between them. The second is on the combination in a reciprocating electric engine with a motor coil or coils, a magnetic piston adapted to be reciprocated therein, and a magnetic extension upon such piston for causing it to move with greater force in one direction than in the other. The third is for a reciprocating electric engine system, a method of operating reciprocating electric engines having a plurality of motor coils, and a magnetic piston adapted to be reciprocated through them, which consists in supplying a continuous electric current to the terminals of the motor coils and causing the currents to rise in one coil while falling in the other, thereby transferring the magnetic field from one set of coils to the other, and *vice versa*, without interruption. The fourth is for a reciprocating engine having constantly energized motor coils and supplementary coils, in which the current alternately rises and falls, the combined coils reaching upon and imparting motion to a magnetic piston movable therein. The fifth is for a reciprocating electric engine system covering the combination, with the sectional commutator and stationary brushes of a continuance current machine, of a pair of contact carrying arms radically mounted, with respect to said commutator, and adapted to be moved coincidentally on opposite sides of the commutator between the fixed brushes.

One of the most curious specimens in the shape of a bicycle that Rhode Island cyclists have ever seen is a New Rapid Safety, manufactured by an English firm, which has a pneumatic rubber tire. This machine is the only one ever seen in this city, and there are but two or three more in the whole United States, one of which is owned at Baltimore and another at Boston. It is the production of the St. George's Engineering Company. The tire is several inches in circumference, is a trifle heavier than the ordinary tire, and is, of course, inflated with air by means of a little hand pump. The one great drawback is its looks. It is large and bungling looking, and suggests forcibly the steam roller. Over the paving stones it rides without the slightest jar or rattle, and on country roads it works charmingly. On the track English flyers are making records never made before with the old style safety tire, and the worse the road the faster it passes the other safety riders. The little time that this bicycle has been in town it has been ridden by many of the wheeling authorities, who invariably fall in love with the awkward machine and vow there's nothing like it.

A New Cable Road in Chicago.

The cable street railway which has been in process of construction on the west side of Chicago for the past year is now getting into operation, and the entire line will be used in a few days. One branch runs on Madison street and another on Milwaukee avenue, both connecting with a loop line passing through a tunnel under the Chicago River to the heart of the city. The power houses are as follows: On Rockwell and Madison streets, occupying 210 x 225 feet of ground; on Cleaver street and Milwaukee avenue, occupying 200 x 150 feet of ground, and on Jefferson street, corner of Washington street, occupying 75 x 150 feet of ground. The Rockwell street power house on Madison street has a pair of Green engines, built by the Pennsylvania Iron Works, to move the cable. They are 1200 horse-power each, and only one of them is in use at a time, one being held ready to start at any moment. The fly-wheels are 20 feet in diameter and weight 75,000 pounds. The western cable is 14 miles and the eastern one is 10½ miles in length. The main shaft is 18 inches in diameter. The engines are provided with a steam reverse gear. There are eight boilers in batteries of four each, and each is 200 horse-power. The hight of the stack is 175 feet. It has a powerful draft. The lights are the Sperry system arc lights, run by a Russell engine. There is also a Corliss engine, 20 x 48 inches, for handling the loop through the house.

At the Jefferson street power house the headquarters of the company are located on the second floor, and here all the officers have their rooms. The building is in a tasteful style of architecture, and is an ornament to that location. On the first floor the machinery for the loop is located. There are a pair of Wetherell-Corliss engines, 28 x 60 inches, 500 horse-power each. There are six boilers, in batteries of three each, and each boiler has a 200-horse-power capacity. The stack is 150 feet high, with a strong draft. There are two Russell engines for running the electric lights, three dynamos for the arc lights and one for the incandescent lights; they light the house and the tunnel under the Chicago River, near by. There are two sets of driving gear and a rope transmission of 24 ropes, each 3 inches in diameter. They are imported cotton ropes. The wheel is 22 feet in diameter, and there are two short cables for the loop,

one for the Madison street line and one for the Milwaukee avenue line. This is considered safer than having but one cable loop and divides the power evenly, so that there is less strain.

The Cleaver street power house on Milwaukee avenue is a duplicate of the Rockwell street house. There are a pair of Fraser & Chalmers-Corliss engines, 36 x 72 inches, 1200 horse power each, in the house. There are eight boilers, four in each battery, and the stack is 175 feet in hight. There are 12 miles of cable west and 10¼ miles east, the whole extending from Armitage avenue at the northwest end to Jefferson street on the southeast end. There are two sets of driving gear and one reserve engine for working the loop through the house. There is an electric system along all the cable lines for announcing any alarm at any point of the several lines, which is perfect in its work and will call the instant attention of the engineer at each of the houses to the point in danger. The fuel used in all of the houses is coal screenings; it produces the least possible smoke.

VIRGINIA IRON NOTES.

The contract for the building of the 100-ton blast furnace to be built at Basic City was recently given to Z. T. Henry, who has had a large force of workmen engaged upon the plant, which, it is stated, will be completed by September 1. The cast house is 150 x 50 feet, and the walls of the boiler house, engine house, casting house, pump house and retaining walls are 2½ feet in thickness. The furnace will be equipped with the latest improved machinery.

A company has been incorporated at Roanoke, with a capital stock of $300,000, to put the Robert Hardie cigarette machine on the market. The incorporators are G. W. Palmer, of Saltville, Va.; W. A. Carpenter, of Lynchburg; A. M. Bowman, W. M. Nelson and William Tinsley, of Salem, and F. D. Kemp, of Roanoke. The inventor, Robert Hardie, is from Brooklyn, N. Y. The machine is claimed to have a daily capacity of 100,000 cigarettes.

It is stated at Iron Mound that J. Q. Dickinson, of Charleston, W. Va., has purchased $12,000 worth of iron land and will develop.

The Buena Vista Iron Company, of Buena Vista, have just received one of the new locomotives ordered for hauling ore from the mines to the furnace, which expects to go into blast in September.

Zinc lands in the neighborhood of Ivanhoe Furnace have recently been purchased by the Ivanhoe Zinc Company, who will erect zinc furnaces and develop the property on an extensive scale.

The Norfolk and Carolina Railroad Company intend building machine shops, but have not decided as to location.

The Virginia and Kentucky Coal and Mining Company have been organized at Alexandria, with A. B. Harris, of Boston, Mass., as president; C. J. Gray, of New York, as secretary. The company, beside dealing in real estate, will develop iron and coal lands.

A party of prominent Virginians, among whom were J. L. Barbour, L. W. Venable and others, recently purchased 930,000 acres of mineral and timber lands in Virginia and West Virginia. The subscribers to this purchase met in Richmond last week and effected an organization by the election of the following officers: President, J. Taylor Ellyson, of Richmond; vice-president and general manager, Ham. Shephard, Alexandria; secretary and treasurer, H. A. McCurdy, Richmond. Directors, from Richmond, John Mahony and W. J. Johnson; Petersburg, S. W. Venable and Augustus Wright; Blackstone, G. S. Wing; Alexandria, E. E. Dounhan; Norfolk, H. L. Smith and W. D. Pender; New York, Alexander Glover.

The Elliott's Knob Iron, Steel and Coal Company, of Buffalo Gap, are preparing to purchase machinery, and expect to soon begin mining iron ore, manganese and coal.

The plant of the Lynchburg Zinc Works, at Lynchburg, will be considerably improved and a sulphuric acid works will be built in connection therewith.

It is reported at Alexandria that Crawford & Co., of Washington, D. C., intend manufacturing bicycles there.

At Salem, the Salem Gas Stove Mfg. Company have been organized to manufacture a new gas stove. G. W. Palmer, of Saltvill, Va., is president, and A. M. Bennan is vice-president.

The rolling mill of the Roanoke Rolling Mill Company is to be improved and considerably enlarged.

The Salem Car and Machine Company have just been organized at Salem by capitalists from New York, Boston, Maine and New Hampshire. The authorized capital is $500,000. Work on the new plant will begin as soon as the formation details are completed. J. W. Allemong is president; W. U. B. Stinson, of Concord, N. H., is vice-president.

The two charcoal iron furnaces at Columbia belonging to G. W. Pearson, of Trenton, N. J., are to go into blast again shortly after a number of improvements are effected.

The two Meier furnaces to be moved to Big Stone Gap are to be operated by the Appalachian Steel and Iron Company.

The officers of the newly incorporated Richland Tube Works are H. L. Grove, president; E. R. Dick, vice-president, and Saunders Lewis, Jr., secretary. The capacity of the new plant is to be about 125 tons per day.

At Buena Vista the Alvarado Park Company, recently organized, will develop iron mines on their property.

Philadelphia capitalists have organized a company with a $300,000 capital to establish a rolling mill at Goshen Bridge.

A 75-ton iron furnace is being built at Speedwell by the Pulaski Development Company. The same company are also building a machine shop.

Negotiations are pending at Lynchburg looking to the removal of a hardware factory from the North to Lynchburg.

The capital stock of the Glamorgan Company is to be increased from $87,000 to $100,000 to provide funds for contemplated enlargement of the plant.

At Roanoke the Boney Tank Mining and Mfg. Company have been incorporated with a capital stock of $2,000,000. Frank Huger is president; J. M. Brosuir is vice-president, and J. W. Coon, secretary. The purpose of this company is to develop iron ore properties in Georgia, where they propose erecting furnaces, rolling mills and other industrial plants.

The Valley Engine and Machine Company, of Lynchburg, who were recently organized by Williamsport, Pa., parties, have given out contract for the stone work on their new plant.

An association of some of the most enterprising merchants of Denver, Col., has been formed under the name of "The Denver Manufacturing and Mercantile Bureau," for the purpose of setting forth the many advantages that Denver offers for the business man, and also for the purpose of reaching out after and drawing all who can be induced to locate in the city. The bureau is of recent birth, but some good results have been already attained. Chief of these is the organization of the Hitchcock Knitting and Woolen Factory, with a capital stock of $100,000, all taken. This company have ordered $40,000 worth of the latest and most improved machinery, which is now in the New York Custom House awaiting delivery. Orders have been given for the erection of factory buildings to cost $15,000, and it is thought that the plant will be in active operation by fall, giving employment to about 100 people. The bureau has a number of other manufacturing enterprises in negotiation, but they are more or less in the future, although it is expected that several can be located there. The president and leading spirit in the bureau is ex-Senator H. A. W. Tabor, and W. L. Durbin is the secretary. The office is No. 1448 Curtis street, Denver, Col.

The shipbuilding industry of the United States finds its greatest stronghold on the great lakes, and Cleveland claims for herself the distinction of leading America in the work of turning out vessels. The list of vessels built since January 1 comprises 78 steamers, whose gross tonnage is 63,922, and 18 barges and sailing vessels measuring 15,315 tons, a total of 96 vessels of 78,237 tons. In the year 1889 the tonnage of the vessels built on the Atlantic and Gulf coasts was 93,912.24. The lake shipyards have fallen but a few thousand tons short of this in but six months' work. Last year the vessels built on the great lakes measured 107,080 tons.

PROVIDENCE NOTES.

The annual meeting of the Warren Foundry Company, of Warren, was held last Wednesday, and S. F. Pierce, John Waterman, P. Buffington, W. L. Collmore, William H. Crawley, William B. Nichols and H. E. Wilbur were elected a board of directors.

The James Arnold machine shop estate, corner of Dexter and Bayley streets, Pawtucket, has been sold at auction by the commissioner to William J. Arnold, one of the heirs, for $22,000.

The Rhode Island Locomotive Works has recently put into use in its boiler shops the pneumatic tool for boiler calking. This is practically the same tool as that used in the Westerly quarries for granite carving, but is of a form especially designed for boiler calking.

The chairman of the Pawtucket City Council Committee on the Cotton Centenary Celebration to be held in Pawtucket, September 29, has recently visited Washington, D. C., and obtained for the celebration the loan of the original spinning frames and card used by Samuel Slater in founding the cotton spinning industry. A loom at least 100 years old has also been obtained.

The Bailey Wringing Machine Company, of Woonsocket, have declared not only their regular quarterly dividend of 2½ per cent, but also 2½ extra, making $5 per share.

The Narragansett Machine Company have been awarded the contract for furnishing the apparatus for the new gymnasium of the Young Men's Christian Association.

During the past week a gentleman named Wheeler, well known in New York City in iron and steel circles, was sent to Bristol by parties in this city who thought that he might select a site there for his proposed plant for the manufacture of steel, &c. Mr. Wheeler desired a good depth of water and about 100 acres of land. He was taken to a certain locality where he could get about 35 acres of land and a good depth of water and excellent anchorage. He expressed himself as being more pleased with the locality than any spot he had visited in New England, and the owner of the land was talked with and his price given. Decisive arrangements will be made in about ten days.

The American Ship Windlass Company, of this city, have just paid a quarterly dividend of $3 per share, and are now doing a very large and profitable business.

The works of the Rhode Island Horseshoe Company have closed down for improvements, additions and necessary repairs.

The plant of the Woonsocket Electric Machine and Power Company consists of four mill buildings formerly occupied by the Valley Falls Mfg. Company. The power is furnished by a 252 horse-power water wheel of the Rodney-Hunt pattern, another of 70 horse-power, a Corliss engine of 175 horse-power, and four Armington & Sims' engines of 135, 60, 50 and 50 horse-power respectively.

"LEONIDAS."

The transfer of a part of the Washburn & Moen wire manufacturing plant from Worcester to Chicago, the Springfield *Republican* says, is another indication of the drift of things, which should not be lost sight of by New Englanders. P. L. Moen, president of the company, says in explanation of the change that $4 a ton in in freight cost could be saved by establishing the business nearer the company's Western markets. Having to transport raw materials from a great distance inland, and then having to send the finished products back a great distance to the Western markets, was too much, and to save those markets the company had to move West, or contract their business to the Eastern demand.

The Mexican Minister in Guatemala has intimated to the Government of that country that Mexico will not tolerate any aggressiveness toward Salvador on the part of Guatemala. Guatemala felt alarmed at this, and it is said she will appeal to the United States to protect her against Mexico.

Specifications for Cast Iron Coated Water Pipe.*

BY THOMAS W. YARDLEY, CHICAGO, ILL.

In many years experience as a maker and purchaser of cast iron coated pipe, I have never met with any standard form of specifications for such. Each water works company employing a hydraulic engineer, has, under his direction, prepared complete specifications for the particular conditions required. I therefore have the honor of offering to the institute a form of specifications for cast iron coated water pipe that will be found useful to water works companies, and others requiring pipe of this kind. The conditions are all reasonable and can be carried out by makers without additional cost, and with advantage to purchaser.

Section 1 gives the kind of pipe, with its general characteristics.

Sec. 2 specifies that neutral pig iron shall be used, since such iron possesses the strength required and is uniform in shrinkage.

Sec. 5, requiring makers to give the brand of pig iron used in the cupola, is intended to guard against the use of cinder iron. The characteristics of the ores used in blast furnaces give to each its reputation, and the furnaces using cinder are all well known.

Sec. 7, providing that the shell of each pipe shall be measured for thickness throughout its entire length, enables the inspector to determine whether there are thin plates near the middle of the pipe, where such imperfections are most likely to occur. An inexpensive instrument adapted to such measurement has been devised.

Sec. 8 provides for a test bar, from which to determine the transverse strength of the iron. This bar is convenient in form, can be made with very little cost to the maker, and will give the most satisfactory test of the strength of the iron under the conditions to which the pipe will be subjected in service.

Sec. 11, requiring that all pipe shall be stripped immediately, if taken from the pit before cooling, is very important, for the reason that when pipe is taken from the pit hot, a deposit of loam is frequently left in spots on the outside, and wherever this occurs, the cooling is irregular, and the shrinking strains are unequal. The weakness thus produced may not show under the subsequent hydraulic test, but may be developed after the pipe has been subjected to rough treatment in railroad and other transportation into the trenches.

SPECIFICATIONS FOR CAST IRON COATED WATER PIPE.

Section 1. The pipe shall be of the usual kind known as "Hub and Spigot;" each pipe shall be 12 feet in length from the bottom of the hub to the end of the spigot; the form and dimensions of hub and spigot ends shall be as marked on and shown by drawings, to be furnished or approved by purchaser.

Sec. 2. The metal shall be of the best quality for the purpose, made from what is commercially known as "Neutral" pig iron, which shall have been made from iron ores without the admixture of cinder, and when cast into pipe the metal shall be tough, and of such density and texture as will permit its being easily cut and drilled by hand.

Sec. 3. Each pipe shall have cast on the exterior surface of hub.....in raised Roman letters, 1½ inches long, and shall be further marked in like manner with letters and figures to designate the maker of the pipe, and the year; also serial numbers shall be cast on each pipe, commencing with a number to be designated by the purchaser.

Sec. 4. The pipe shall be cast in dry sand molds or flasks, placed vertically, and shall be of the several diameters named in the contract. The shell shall be of uniform thickness of metal, smooth and sound, without cold shuts, lumps, swells, scales, blisters, sand-holes, or other imperfections; truly cylindrical, of full diameters, and with interior and exterior surfaces concentric.

Sec. 5. Chemical analysis of the iron used shall be given whenever asked for, and a written daily report shall be furnished to the inspector, giving the brands of pig iron used in each day's melting.

Sec. 6. Each ladle of iron from which the pipes are poured shall be designated by a consecutive number, beginning with each day's work. A daily record of pipes cast shall be kept and furnished to the inspector, and must record the number of the ladle from which each pipe was poured, as well as the number on the pipe.

Sec. 7. The shell shall be of uniform thickness throughout its entire length. Should the inspector find in any one place a variation in thickness of more than 10 per cent. less than that specified in the contract, such pipe shall be rejected.

Sec. 8. From each ladle of melted iron there shall be cast one test bar, not less than 26 inches long, 2 inches wide and 1 inch thick. This bar shall be tested for transverse strength when loaded in the center, 24 inches between supports (narrow sides vertical), and shall carry a center breaking load of not less than 2000 pounds, and show a deflection of not less than $\frac{3}{10}$ inch before breaking. This bar shall be cast as near as possible to the specified dimensions without finishing up; but correction shall be made for variation of width and thickness, and the corrected result must conform to the above requirements.

Sec. 9. If any test bar shows a breaking strain or deflection less than the above requirements, all pipe made from the corresponding iron shall be rejected.

Sec. 10. The maker shall furnish to the inspector in charge two wrought iron rings (male and female templates), the one showing the outside diameter of the spigot end and the other the inside diameter of the hub end of each size of pipe; and the said pipe shall conform in diameters to the respective templates.

Sec. 11. The pipe shall be thoroughly cleaned, both inside and outside, without the use of acid or other liquid. If the pipe is stripped while above a dark blue heat all sand must be removed from the outside immediately.

Sec. 12. When the pipe is so cleaned it shall be heated to 300° F., and immersed in a bath of coal pitch varnish of an equal temperature. When the pipe is removed from the bath this coating shall fume freely, and set perfectly hard within one hour from the time of removal. No pipe shall be tested by hydrostatic pressure until the varnish has become hard.

Sec. 13. When coated, the pipe shall be subjected to a test by hydrostatic pressure of not less than 450 pounds per square inch for 6 inch and 8 inch; 400 pounds for 10 inch and 12 inch; 350 pounds for 16 inch and 20 inch; 300 pounds for 24 inch and 30 inch, and 250 pounds for all 36 inch diameter and upward; and while under pressure the pipe shall be subjected to an additional test by a series of smart blows at various points throughout its entire length with a 3 pound hammer, attached to a handle 16 inches long. If any failure is shown in the pipe during this test it shall be rejected.

Sec. 14. The weight of each pipe must correspond as nearly as possible to the standard named. Any pipe which may fall short over 5 per cent. of the standard weight shall be rejected, and no weight shall be allowed or paid for any pipe that shall exceed 2 per cent. of the standard weight. These requirements shall be determined by the weight of each pipe separately.

Sec. 15. All special castings, such as "Ell's," "Tee's," "Y's," bends, crosses, &c., shall be made from the same mixture of pig iron as has been approved for pipe; and all such castings shall be submitted to the same care in cleaning and heating, and the bath shall be used under the same conditions as for straight pipe.

Sec. 16. All appliances necessary for the inspector to carry out the requirements of these specifications shall be furnished by the maker free of cost to the purchaser.

* Read at the Washington meeting of the American Institute of Mining Engineers.

Another Strike Settled.

The strike of the puddlers at the American Iron and Steel Works of Jones & Laughlins, Limited, at Pittsburgh, has been settled, and the plant resumed operations in every department on the morning of July 23. This strike had some peculiar features and threatened to involve every employee of the firm. The firm signed the Amalgamated scale after the Conference Committee had agreed to strike out clause 3, and insert the following in its place:

"When a majority of the furnaces in any mill require more than the time specified in clause 2 to make their heats, due notice, as described in clause 2, shall be given, in accordance with article 10 of the Amalgamated Association of Iron and Steel Workers' Constitution of 1889-90; and if after three days the mixture is not changed, then 50 cents per ton extra shall be paid for all hard iron thereafter made until the stock is changed. By the word majority is meant the majority of the furnaces working the same mixture of iron."

The substitution of this clause was objected to by the puddlers and they refused to go to work. At a conference held in Pittsburgh between representatives of the firm and the Amalgamated Association the following agreement was drawn up and signed by both parties:

PITTSBURGH, PA., July 21, 1890.

"The following understanding relative to the pending trouble in the puddle department of the American Iron Works has this day been arrived at, and the parties interested representing the firm of Jones & Laughlins and the Amalgamated Association of Iron and Steel Workers hereby agree thereto:

"1. We agree that the puddle department is subdivided into 'two sides,' each of which shall act separately for itself on questions of hard iron.

"2. It is further agreed that any number of furnaces on either side working hard iron as understood by clauses 2 and 3 in the boilers' scale of 1890-91 shall have the right to complain to the firm through the puddle boss, and the same shall be recognized by the firm, who shall forthwith endeavor to get a better mixture."

This was not exactly what the puddlers had demanded, but rather than continue the strike they decided to accept it and go to work.

F. A. Huntington's foundry, in San Francisco, has been added to the list of those which are under the ban of the Molders' Union. The cause was that Huntington, receiving an order from the mines for a large amalgamation pan, and having no pattern, borrowed one from a foundry that is working non-union men. The Molders' Union at once informed him that he could not use this pattern, when he became enraged at their dictation, and discharged all his men.

The Southern Pig Iron Tariff No. 12, just issued, to go into effect on the 1st ult., makes the rate to Cincinnati $2.75 from Birmingham and Anniston; $2.25 from Chattanooga, and $2.50 from Sheffield and Rising Fawn.

THE WEEK.

Authorities are not agreed respecting the population of New York City. Two weeks ago it was duly certified by Supervisor Murray that New York City, without the annexation of a rood of territory, had grown from a population of 1,206,299 in 1880 to 1,627,227 in 1890, and still held first place. At this later date Mr. Porter sends out as an "official rough count" for New York a population of 1,513,501, an increase for the decade of a little more than 25 per cent. In the decade ending 1880 the increase was 28 per cent.; in that ending 1870 it was 17. This last count is altogether too "rough" to be satisfactory.

Improvements in Peru under what is known as the Grace contract with the holders of Peruvian bonds do not appear to be prosecuted with much vigor. United States Minister Hicks, who recently returned from Lima on a short visit, says the company formed to carry on the railroad work has begun operations on the Verrugas Bridge, which was the finest work on the Oroya Railway, built by Henry Meiggs. It was carried away by a cloudburst in 1889. The contract on the ironwork of that bridge has been let to people in New York, and part of the material has already been shipped. That, however, is the only work that has actually been contracted for so far. Nothing has been done yet about the southern railways. Mr. Hicks is of the opinion that most of the new material will be bought in England.

Engineer Eiffel, of tower fame, is said to have demonstrated that the renowned colossal statue that bestrided the harbor of Rhoades never existed; that the weight of the body would have "crushed the legs." Perhaps his figures prove too much. The engineers of antiquity cannot be discrowned so easily.

The work of lengthening the North River piers, in order to accommodate the big European steamships, will probably commence next month.

A strong company with $5,000,000 capital have formed in London, England, for the purpose of acquiring and working the phosphate lands in Canada.

The Proctor & Gamble Company, with a capital of $4,500,000, composed of New York parties organized to manufacture soaps, glycerine, oils, &c., filed articles of incorporation in the New Jersey State Department last week and the stock was all promptly taken.

Crop prospects in Louisiana are better than they were at this time last year, notwithstanding the overflow. In the flooded parishes the crops are small and late; but with few exceptions cotton, corn and cane are ahead of July, 1889.

Enormous stockyards are being laid out at Baden, in San Mateo County, Cal., for the Armour syndicate. Bids have been advertised for 6,000,000 bricks to be used on the main buildings.

Five strikers' pickets were arrested on complaint of President White, of the Manhattan Brass Works, in East Twenty-eighth street. The strike has been on 11 weeks, on account of the employment of non-union men.

The Home for Old Shipbuilders and the Academy for the Instruction of Young Men who Desire to Learn Shipbuilding, which have been founded by William H. Webb, who, in the days of America's supremacy on the high seas, was a distinguished shipbuilder, will soon be established on a site at Fordham Heights, comprising 13 acres of land. The charter for the institution has been obtained, the trustees have qualified and Arthur B. Jennings has been chosen architect of the building, work on which is to begin immediately. The building is to cost $200,000, and with the endowment Mr. Webb's philanthropy will represent an outlay of upward of $1,000,000. Among the trustees is Charles H. Cramp, of Philadelphia.

A comparison of the national liabilities of the Argentine Republic at two critical periods in its financial history is as follows:

	1875–6.	1888–9.
National debt, say	$90,000,000	$190,855,000
Ditto provincial—		
Buenos Ayres	15,500,000	66,250,000
Entre Rios	.....	22,500,000
Santa Fé	.....	23,000,000
Paper currency	.....	100,000,000
Railway guarantees, &c.	.....	375,000,000

At the former date a financial collapse was averted by the aid of a prominent banking firm in London. Negotiations for a new sterling loan are in progress, but the difficulty of maintaining Argentine credit at the present time is supposed to be much more serious.

The growth of the domestic silk industry in the United States is shown by the fact that imports of the raw material at New York and ports on the Pacific Coast in the year 1889-90 amounted to $24,646,000, an excess of more than $4,500,000 compared with the previous year.

The increase in the use of ammonia for ice machines has raised the price of that commodity 75 per cent.

The necessity for a federal inspection of steamboats plying on interior lakes is painfully enforced by the capsizing of the steamer Sea Wing on Lake Pepin, Minn., and drowning of 100 excursionists.

Steamship fares to Europe are 25 per cent. less than those charged during the last three months.

The Singer Company have purchased ten acres of valuable water front adjoining their Elizabethport works. It is said that the company contemplates the erection in the near future of a big thread factory.

Reports concerning the sale of the great stockyards at Chicago have at last taken definite shape, it appearing from an official announcement that the Chicago Junction Railways and Union Stockyard Company have been organized under the laws of New Jersey, with Chauncey M. Depew, John Hoey, and others equally well known among the directors, together with representatives of a large amount of English capital, one of whom is Mr. Childers, late Chancellor of the Exchequer. The capital stock is $13,000,000, and $10,000,000 of 5 per cent. gold bonds will be issued. The Chicago management remains unchanged, as the stockyards organization previously existing will be merged. The net profits last year are stated to have been $1,738,000.

A party of wealthy Mexicans are visiting Chicago for business purposes and expect to extend their tour to New York.

The Government bonded warehouses in New York are filled with merchandise to excess, in consequence of the desire to anticipate higher duties. Merchants declare that it takes more time to get their packages from the wharf in New York to and through the public stores than it takes to convey them from the interior of Germany, France or England to New York. One cause of the difficulty is that there are not such facilities at the public stores for receiving and delivering merchandise as the volume of business demands.

The Disstons, of Philadelphia, are gradually acquiring control of the principal saw manufacturing concerns in this country. The purchase of the works of the Harvey W. Peace Company, in Brooklyn, now follows the recent purchase of the Richardson factory in Newark. The price paid is said to be $100,000.

The Indian tea companies are prospering. Investments in this line of enterprise already represent $30,000,000, and the Chinese product is crowded in the market more and more. Dividends range from 10 to 25 per cent. per annum. The art of tea growing has been wonderfully improved by English planters, with a consequent increase in the demand for their productions. The statistics recently formulated by the Indian Tea Districts Association show that the relative positions which Indian and China tea held three years ago are now nearly reversed, the imports of Indian tea into the United Kingdom last year representing as nearly as possible £5,000,000. The actual weight of Indian tea imported during the season 1889–1890 just closed was 101,052,264 pounds, compared with 93,203,927 pounds of China tea, whereas in 1884–1885 the imports of China tea were 142,476,000 pounds, compared with 61,472,112 pounds of Indian teas.

The capacious deep-water harbor of Port Angeles, near the northern entrance to Puget Sound and directly south of Victoria, the capital of British Columbia, promises to be one of the future great cities of the Pacific Slope. The different lines of transcontinental railways are pushing forward to make it one of their terminal points. All the territory adjacent to Puget Sound has developed with amazing rapidity. The cities of Tacoma and Seattle, both of which have met with calamities and devastation by way of flood and fire within the last year, are marvels of activity, wealth and positive growth, and there is no reason why Port Angeles, with its superior advantage, should not advance still more rapidly.

The new British steamships which are to cross the Pacific and to compete with an American line receiving $14,000 a year for mail transportation are to be furnished with a subsidy of $375,000 a year; and the corresponding line from Halifax to Liverpool will have subsidies from Canada and England amounting to $500,000 annually. This is apart from the subventions to the Canadian Pacific railways, virtually aggregating $10,686,000 a year, according to the calculations of Mr. Nimmo, and constituting a discrimination against American commerce and railways. Here is a sum exceeding $11,500,000 annually, which is protecting the British line of steam and railway communications between Liverpool and Hong Kong via Canada.

A manual training school is about to be established at the Jewish orphan asylum in Cleveland, in a building erected for its accommodation. The object is to familiarize the boys with the uses of tools.

A new transcontinental railway line is said to be in contemplation by the Baltimore and Ohio Railroad in conjunction with the Northern Pacific Railroad. Land purchased for car shops in the suburbs of Chicago marks the junction point.

The salvage awarded by the court in Hartford for getting the Norwich steamer City of Worcester off the rocks is $32,971.

The lofty structure, known as the Western Union Building, on the corner of Broadway and Dey street, caught fire on Friday morning in the battery room, as supposed from the crossing of the wires, and the woodwork of all the upper stories was burned out. The effect was to destroy the ship news cable as well as all telegraphic connection with distant markets, so that business on the mercantile exchanges was temporarily suspended.

The wires centering in the enormous switch in the burned building were apportioned as follows:

Southward	185 wires
New York City	200 wires
Westward	190 wires
Eastward	150 wires
Long Island	75 wires
Miscellaneous	80 wires

In the operating department were 459 operating tables with their instruments. The loss to the company, exclusive of that caused by the interruption of business, will not exceed $150,000. It is intimated that the fire hastens contemplated improvements and enlargements that will give more efficiency to the telegraphic service.

The difficulties encountered in the manufacture of ramie fiber tend to discourage efforts to introduce any perfect substitute for cotton, wool and silk as materials for textile fabrics.

Jamaica invites Americans to attend the coming exhibition on that beautiful island. The Falmouth *Gazette* says: "To merchants and manufacturers it offers an ever increasing trade for their wares. Due notice is taken of this fact by keen business men, for of late we have noticed an unusual number of traveling agents frequenting these parts, and they readily open accounts with the larger firms of the island."

Public Works Commissioner Gilroy complains that the steam heating pipes destroy the asphalt pavement in Wall street, New York. But the damage thus arising is trivial compared with the silent but continual injury that the heat from the pipes is doing to the foundations of buildings along the lines of pipe and to the sewers and electric conduits and subways which parallel and intersect them. Commissioner Gilroy gave it as his unqualified conviction that the only way in which the interminable nuisance of opening the pavements every time repairs were made necessary to any of the pipes or conduits in the streets could be avoided was by the construction of a tunnel under the main thoroughfares, which should contain all the sub-surface works of all kinds, and afford sufficient space for access to them for repairs and connections or alterations without tearing up the payment. Such a tunnel, he said, ought to be built under Broadway before the Broadway Railroad cable is put in, and before the new pavement is laid. But before such a work could be done it would have to be authorized by the Legislature, which must also authorize the issuance of bonds by the city to pay for it.

The contemplated improvements of the Lehigh Valley Road, both in Jersey City and in New York State, in its approach to Buffalo, will be completed before 1893. The Lehigh Valley has its own rails from its present main line at South Plainfield, N. J., to Roselle. There it connects with the New Jersey Central Road and runs its freight through to within a mile of its water front at Jersey City. The company will parallel the Pennsylvania tracks across the meadsws until the hills west of Jersey City are reached. A large depot will be erected and two sets of ferries will convey passengers to and from New York city.

A large quantity of naphtha, billed as kerosene, is supposed to have caused the disastrous explosion on the steamship Tioga, at Chicago, by which 25 men lost their lives.

The General Term of the Supreme Court on Friday rendered a decision on the appeal of the defendants in the suit of Gray as receiver of the North River Sugar Refining Company *vs.* Donner and De Castro Sugar Refining Company and others. This is the appeal from the order of injunction granted in January last restraining the trust and its members from selling or disposing of or transferring their assets, property, &c., or from paying dividends. The order was modified by Judge O'Brien, at Special Term, so as to permit the payment of the last dividends.

The St. Johnland distributing reservoir, built for the Kings County farm was accepted and paid for without testing. After the pump register indicated a loss of more than 1,000,000 gallons per diem, laborers were set to work to fill the chasms.

In 1871 there were 13 of the original States and 24 admitted, from 1791 to 1867 (Nebraska was the twenty-fourth), making 37 at that date. There have been admitted since:

Colorado	Aug.	1, 1876
North Dakota	Nov.	3, 1889
South Dakota	Nov.	3, 1889
Montana	Nov.	8, 1889
Washington	Nov.	11, 1889
Idaho	July	3, 1890
Wyoming	July	—, 1890

This makes 44 States, of which only 43 were admitted before July 4 of this year, and under the statute only 43 stars will be on the flag until July of next year.

The Mersey Dock Board will expend $2,500,000 in deepening and improving the docks at Liverpool.

It is said that the sub-committee appointed to select a site for the proposed new municipal building have fixed upon the property on Chambers, extending from the Emigrant Savings Bank to Centre street and thence through to Duane street, and embracing 60,000 square feet.

A war of freights in the China trade across the Pacific has been already initiated. The Canadian Pacific Railway steamers gave the provocation by taking freight at Victoria for San Francisco, and the American line will retaliate by sailing from Hong Kong either to Victoria or Tacoma direct, and doing business in connection with the Northern Pacific and Oregon Short Line. In order to avoid competition with the American coastwise line, it will take no freight between Victoria and San Francisco. Acting on this plan the Pacific Mail expects to secure an established business before the Canadian steamships, now nearing completion in British yards, can be placed on the trans-Pacific route

Radical changes in the industries of Connecticut have taken place within the last 40 years, as shown by a comparison of the census now in progress and the labor inquiry instituted by the State in 1845. The total products, as shown by the official report, were valued at nearly $49,000,000, and the leading items were wool, grain, potatoes, fruit and dairy products, also wood and charcoal. These values it is now shown have fallen off one-half. The curious facts relating to the manufacturing of the period in question will indicate as important changes.

The contractor for the building of the Broadway cable road promises to have the line in operation by January 1, but not through its full extent. The plant proper of the central power house of the new system will be in the present office and stable building of the company, between Fiftieth and Fifty-first streets and Sixth and Seventh avenues. Then there will be constructed three power stations along the route. The precise location of these stations has not yet been determined. The syndicate leasing the line, which is commonly known as the Elkins-Widener syndicate, has had much experience with cable systems, and is now operating cable roads in Philadelphia, Pittsburgh, Chicago and Baltimore.

MANUFACTURING.

Iron and Steel.

The Vanderbilt Steel and Iron Company, of Birmingham, Ala., are about ready to blow in their new blast furnaces. This plant is fitted up with Massick & Crooke's hot blast fire brick stove of which McClure & Amsler, of Pittsburgh, are the sole agents in this country. They also have a pair of Hamilton blowing engines built by William Tod & Co., of Youngstown, Ohio.

At Pittsburgh last week a bill in equity was filed by the Liggett Spring and Axle Company, Limited, against Margaret M. Liggett *et al.* The company have been operating the works since the death of James S. Liggett in August, 1878. They ask that a master or a commission be appointed to make a partition of the estate between the present company and the original heirs who still have an interest in the works. There have been $20,000 worth of improvements put in the plant which the plaintiffs wish not to be counted in the valuation of the original property.

An explosion of gas in blast furnace No. 1, at the Cambria Iron Works, Johnstown, injured several men, two of them fatally.

The Appollo Iron and Steel Company, of Pittsburgh, are building a new 24-inch mill at their works at Apollo, Pa., and will, in the near future, erect a second one. With the addition of the two mills the product will be increased about 400 tons per month.

The blast furnace of the Wheeling Iron and Nail Company, at Wheeling, W. Va., which is now undergoing repairs, will be ready for operation in about three weeks.

The idle furnaces in the Birmingham district are all getting back to work again and business among them is reported to be extremely good. The Trussville furnace, idle for some time, has blown in, while the Alice furnaces are at work turning out their usual quantity of iron. The two Oxmoor furnaces of the De Bardeleben Coal and Iron Company and their four Bessemer furnaces will go into blast at once and are now being charged. The Sloss Iron and Steel Company's two North Birmingham furnaces are running again, while at Ensley City three of the Tennessee Coal, Iron and Railroad Company's furnaces have been running all the time, and the fourth, which has been undergoing repairs, is about ready for work.

At a regular meeting of the Board of Directors of the Belmont Nail Company, of Wheeling, W. Va., held on Tuesday, July 15, a dividend of 5 per cent., payable out of the earnings of the last six months was declared.

The Benwood Iron Company, of Wheeling, W. Va., expects to have their blast furnace, at Martin's Ferry, Ohio, in operation on August 1, next.

The sale of several iron and steel plants at Youngstown, Ohio, to an English syndicate, mention of which has been made in these columns before, is off for the present, but has not been abandoned altogether. The foreign representatives are to visit this country in September and it is possible that some arrangement may be concluded. While the price asked was satisfactory to the English capitalists they desired the owners of the plants to retain a third interest in them for three years, which they refused to do, desiring to sell outright or not at all. The plan proposed by the English capitalists is the same as that upon which the Otis Iron and Steel Company, of Cleveland, Ohio, was sold.

At Pittsburgh, on the 18th inst., a bill in equity was filed in the United States Court by M. S. Stokely and others, against the stockholders of the Steubenville Furnace Company, asking for the appointment of a receiver for the company, and an accounting of its affair. Their indebtedness is placed at $50,000.

A strike involving nearly 400 men has been inaugurated at the works of the Pennsylvania Nut and Bolt Company, at Lebanon, Pa., by the Amalgamated Association of Iron and Steel Workers. The difficulty arose by the men stopping work at noon, on July 3, on account of the extreme heat, without permission from the superintendent and the refusal of the general manager to permit them to return to work unless they would agree to abandon the association. At present there are no indications of a settlement of the trouble.

We are advised that there is no truth in the report that the Jefferson Iron Works, of Stubenville, Ohio, were soon to commence the erection of a steel plant.

The plant of the Spaulding Iron Company, at Brilliant, Ohio, was offered for sale for the second time at auction on the afternoon of the 15th inst., but there were no buyers. The mill was appraised at $133,000, and was offered at two-thirds of the appraisement—$88,667. It is

thought that a new appraisement will be ordered by the court, which meets in Steubenville, Ohio, on the 26th inst.

The Moorhead-McCleane Company, proprietors of the Soho Iron and Steel Works, at Pittsburgh, signed the amalgamated scale last week, but it is claimed that certain clauses relating to the open hearth steel department are not satisfactory to the firm, and it is probable that operations will not be commenced in that department for some time to come.

Carrie Furnace No. 1, of the Carrie Furnace Company, at Rankin Station, Pa., has been blown out for relining and repairs. It will be idle about two months.

The Pennsylvania Steel Company, Steelton, Pa., contemplate the erection of an addition to the billet mill.

The Standard Iron Company's mill, at Pittsburgh, Pa., recently closed down for repairs, which will probably take a month.

Grace Furnace, at Marquette, Mich., is ready to blow in whenever satisfactory rates on the part of the railroads are arrived at.

The Thatcher Furnace Company will locate at Argentine, Mo.

The plant of the Columbia Iron and Steel Company and of the Pennsylvania Construction Company, located at Uniontown, Pa., has been bought by English capitalists. The capital stock of the former is $350,000 and of the latter $50,000, held chiefly by Pittsburgh parties.

The Pittsburgh Iron and Steel Engineering Company, of Pittsburgh, have secured the contract for building the Bessemer plant of the West Superior Iron and Steel Company, at West Superior, Wis. The initial plant will contain two 5-ton vessels, and will be completed early in 1891. The output of the works will be ship plate and merchant steel.

A reduction in wages will prevail at the Homestead Steel works, of Carnegie, Phipps & Co., Limited, at Homestead, Pa., for the three months commencing July 1, in accordance with the sliding scale arrangement. The committee appointed by the workmen and the firm have found that the average selling price of billets for the three months ending on June 30 was $28.35. This will entail a reduction in wages of 17 per cent. in contrast with the wages paid for the three months ending on June 30, which were based on $34 per ton as the selling price of billets. Notwithstanding this reduction, the men are still receiving 11 per cent. higher wages than for the same period last year.

It is reported that the recent increase of the capital stock of the Chester, Pa., Rolling Mill Company from $600,000 to $1,000,000 means that important changes are to be made to this plant. It is said the company propose to erect another blast furnace, two open hearth steel furnaces, to increase the Bessemer steel works and to add a three-high rolling mill.

Joanna furnace, Berks County, Pa., resumed operations on the 19th. This is one of the largest furnaces in that section and had been idle since last fall.

The Pennsylvania Steel Company, Steelton, has been rolling 90-pound rails to take the place of the 79's on the Bound Brook road.

The machinery for the blooming and rail mill of the Pennsylvania Steel Company's Sparrow's Point, Md., plant is on the ground and developments at that point are being rapidly pushed.

The De Bardeleben Coal and Iron Company and the Little Belle Iron and Steel Company have filed a declaration of consolidation at Montgomery, Ala. The consolidated company is capitalized at $10,000,000.

The Platt Iron Mining and Manufacturing Company, of Michigan, have re-elected R. J. Whaley president and F. A. Platt secretary and treasurer. Richard A. Parker has been engaged to superintend the work of developing the company's mining property,

The blooming mill of the Columbia Iron Works, Uniontown, Pa., has been started and every department is now running double turn.

Stack No. 4 of the Glendon Iron Company, Easton, Pa., will be torn down.

Wm. Swindell & Bros., of Pittsburgh, Pa., have erected and placed in successful operation since January 1, 1890, the following open hearth furnaces and improved gas producers: Two 20-ton furnaces, four large heating furnaces and 16 improved gas producers for the Passaic Rolling Mill Company, Paterson, N. J.; two 20-ton furnaces and eight gas producers for the Pottsville Iron & Steel Company; two 15-ton furnaces for Wm. Clark's Son & Co.; one 15-ton furnace for Howe, Brown & Co., Pittsburgh. They have just finished one 5-ton furnace for the Syracuse Steel Foundry Company, Syracuse, N. Y.

J. W. Britton, of Cleveland, formerly the president of the Britton Iron and Steel Company, has bought the unused merchant mill which formed part of the equipment of the Union works of the Illinois Steel Company, at Chicago, and will remove it to Cleveland. He has purchased a site on the lake front, east of the Britton Iron and Steel Works, on which he proposes to re-erect the plant. The expectation now is that he will have in operation in 60 to 90 days a mill making plates and sheets A galvanizing department will be added to make galvanized sheet iron.

Machinery.

Mackintosh, Hemphill & Co., of Pittsburgh, are building for the Radford Iron Company, of Radford, Va., three blowing engines for the new blast furnace. The steam cylinders are 42 x 60 inches, and the air cylinders are 84 x 60 inches. They are also engaged in overhauling the slabbing mill of the Homestead Steel Works of Carnegie, Phipps & Co., Limited, at Homestead, Pa., so that it will roll to a width of 115 inches.

The Sizer Steam Forge Works, at Buffalo, were recently destroyed by fire, the loss being estimated at $30,000.

An addition 100 x 150 feet is being added to the factory of the Edison Lamp Company, at Harrison, N. J.

At Monticello, Ill., on the 14th inst., Hoffman Bros.' large foundry and machine shops were burned. A heavy wind was blowing at the time and the entire plant was destroyed. The buildings and machinery had but recently been sold to H. V. Moore & Co., bankers.

At Pittsburgh, last week, in the case of the Peninsular Car Company against the Pittsburgh, Shenango, and Lake Erie Railroad Company an order was made allowing the receiver of the road to remove the car shops and roundhouse from Shenango to Greenville. The cause of the removal was inducements offered by the Board of Trade of Greenville.

William Tod & Co., of Youngstown, Ohio, are building a pair of Hamilton blowing engines for the Salem Furnace Company, of Salem, Va.

The machine shops and boiler factory of J. C. Todd, situated at Paterson, N. J., were entirely consumed by fire on Sunday last. The main building was five stories high and built of brick, and contained much valuable machinery. The principal industry was the manufacture of cotton machinery, and the total loss is estimated at $150,000.

Hardware.

Electric Cutlery Company, 91 Chambers street, New York, report that they are very busy manufacturing, under the brand Electric, an exceptionally complete line of Cutlery, to which they are constantly adding new goods.

American Wire Nail Company, Covington, Ky., contradict the press reports indicating that they have had trouble with their men in regard to wages.

Illinois Iron and Bolt Company, Carpentersville, Ill., are contemplating the erection of another extensive warehouse and additions to their offices and paint shops. The C. & N. W. Railway Company are laying a switch across the river into their yards and warehouses, which will materially improve their facilities for handling raw material and finished goods.

The Cincinnati Wire Company have sold their entire plant, with the exception of the machinery for manufacturing wire nails, located at Eggleston avenue, Lock and Fifth streets, Cincinnati, Ohio, to the Hinds-Ketcham Printing Works, of Brooklyn, N. Y. The Wire Company will remove to some point outside the city limits, in order to secure more and much needed room. The present works have been in continuous operation (a greater portion of the time nights, as well as days), ever since starting up, with but few brief intervals.

By the explosion of a large quantity of powder being shipped on the P. C. and St. L. R. R. on the 16th inst., at King's Mills Station, Ohio, the Peters Cartridge Company, whose works were located at that point, suffered a complete loss in the destruction of their plant. At a meeting of the stockholders and directors, held on the 18th inst., it was decided to rebuild at once, but probably not at the same point, and upon a much more extensive scale.

Miscellaneous.

The Pennsylvania Mfg., Mining and Supply Company, of Pittsburgh, have resolved to close up their business and wind up their affairs. Their various properties are valued at from $250,000 to $300,000. The reasons assigned are the small margin of profits and the dissatisfaction of some of the stockholders with the policy outlined by the officers. The company's charter will not be surrendered just yet, and at the meeting of stockholders the following directory was chosen: George Laing, Finley Torrens, D. A. Stevenson, William H. Cain, Henry Moseley, John A. Moore, J. R. Sterrett, J. P. Farley, J. S. Davison.

A company with a capital of $200,000 have been organized to erect a car building plant in Montgomery, Ala.

The Scott Machine and Hardware Mfg. Company, 1735 Blake street, Denver, Col., are adding a plant for twisting metal to odd shapes. This is an entirely new industry in Denver, and one for which a want has been felt. They will also begin the manufacture of several varieties of hardware specialties in a short time.

The Excelsior Needle Company, Torrington, Conn., will soon erect a new modern factory building at Torrington, to be situated just north of their present quarters and on the line of the Naugatuck railroad. The building will be brick, three stories high, 350 x 30 feet, and of fireproof construction. It will be equipped with improved machinery, and is expected to be completed by October 1.

The Pratt & Cady Company, of Hartford, Conn., will build a new foundry building, 250 feet long by 75 feet wide, which promises to be one of the most complete buildings of the kind in the New England States. The building will be designed and built by the Berlin Iron Bridge Company, of East Berlin, Conn., the side walls being of brick and the balance of the building being of iron. The building is divided into three parts, the central portion being 35 feet in width with two wings each 20 feet in width. Through the central portion there will be a 10-ton traveling crane running the whole length of the building.

The following are among newly-created Illinois corporations: Chicago Metal Company, at Chicago, to manufacture metallic compounds; capital stock, $200,000; incorporators, John L. Bonlellar, Grant Price, John W. Breckenridge. National Wire Nail Mills, at East St. Louis, to manufacture wire nails; capital stock, $250,000; incorporators, H. E. Piggott, G. R. Bispham, H. C. Gerke.

The extensive machine works of J. C. Todd, one of the oldest manufacturing establishments in Paterson, N. J., was destroyed by fire the 20th inst., entailing a loss of about $150,000. It was the principal establishment in the United States for making hemp and rope machinery, and the owner was the pioneer in this country in producing improved machinery for this purpose. The products of the concern supplied many of the principal roperies in this country, Great Britain, India and Australia. The works covered about two acres of ground. The principal machine shop and erecting room was 125 feet long, 89 feet wide and four stories high. The blacksmith shop contained a dozen fires, and to it was attached a building devoted especially to the construction of heavy machinery, containing a lathe capable of turning 22 feet in diameter. The foundry was 120 x 40 feet. The pattern shop was not destroyed. Besides the flax, silk and rope machinery made there, many specialties were produced, including the Baxter portable engines.

The fourth large steamer built in Cramp's yard, at Philadelphia, for William P. Clyde & Co.'s New York, Charleston and Florida line, was launched on Saturday. She is of iron, 300 feet long, 43 feet beam, 29 feet depth of hold, 3000 tons measurement, with triple expansion engines and four steel boilers. She will be fitted up with all modern improvements and splendid accommodations for 150 passengers, and will be ready to take her place in the line about September 1.

The new iron merchant ship Yucatan, a sister ship to the Yumuri and Orizaba, of the New York and Cuba Steam Navigation Company, was launched on the 16th from Roach's shipyard. The vessel is one of the finest and most powerful ever built at this shipyard. She is 342 feet long, 43 feet beam and 24 feet depth of hold. She is schooner rigged, and has triple expansion engines and six immense Scotch boilers.

The Iron Age

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RICHARD R. WILLIAMS - - HARDWARE EDITOR.
JOHN S. KING. - - - - BUSINESS MANAGER.

The Blind Policy of Western Farmers.

The farmers of the West seem to be very much in earnest in endeavoring to secure supplies at the lowest possible cost. They have forced merchants in numerous localities to reduce prices to a point which permits hardly any profit, and now they propose to engage in manufacturing themselves, so as to save manufacturers' profits. Factories for the production of binding twine are projected at various points throughout the West, and an inroad is also to be made on the plow trade. The farmers of Illinois, acting in conjunction with the Knights of Labor, have worked up a scheme for the establishment of a plow factory at some point in the State, to be started with a capital of $500,000, and to be run entirely in the interests of farmers. The announcement has been made by the projectors of the works that they intend to have a plow factory large enough to supply the farmers of Illinois with all the plows they can use, and that they will save from 40 to 50 per cent. of the price which they are now obliged to pay. The farmers doubtless have in view the huge plow factories which they have seen grow up in their midst, and believe that enormous profits must be realized from the manufacture of plows, or else such establishments could not be maintained. They also probably believe that it is a very easy matter to conduct a plow factory, and that if they can only erect a plant it will run itself. The manufacturing business always seems such a simple matter to outsiders, who envy the owners their possession of the apparent bonanza.

This feeling among farmers that they have been compelled to pay exorbitant prices for supplies has almost taken the form of a craze, which will have to run its course and be cured by natural causes. It cannot be checked by attempts to meet their views and by a general lowering of prices from their present level. All staple articles such as farmers use are now sold by manufacturers at very close prices, and are distributed by merchants whose margins are not narrowed by the great competition they meet with on every side. If they reduce prices still lower, in consequence of the clamor of the farmers, it would appear at once that the latter were justified in their demands, and they would probably insist on still further reductions. As long as a manufacturer or merchant would continue in business it would be apparent that he was making some sort of a profit, and this the farmers do not seem willing to allow. To yield to them means bankruptcy. It seems a better policy not to yield and to risk the chances of bankruptcy through the competition which they threaten to establish. The only lines in which very large profits are made to-day are in the manufacture and sale of specialties controlled by patents or of such a nature that their production is restricted. The farmers do not propose to compete in these lines, but in staple goods, such as they are constantly using, and the manufacture of which is open to all.

The absurdity of their position in this matter is probably more clearly manifested with regard to the plow trade than anything else. Plow manufacturers have latterly enjoyed a moderate degree of prosperity and are able to make a fair profit on their operations; but for several weary years they endured a season of adversity as severe as that which has latterly afflicted the Western farmers. Some large concerns were unable to endure the strain, but were forced into bankruptcy. The others continued to exist simply because of the accumulated profits of former times. All of them could only operate their factories with a diminished force, and all of them sold plows at ruinously low prices. The lack of profit and the excessive capacity of the plow factories of the West caused them to endeavor to form a combination in 1888–9, but it was in operation only a few months and failed to control the trade. If experienced manufacturers were not able at that time to make both ends meet, how could a farmers' factory have sustained itself without assessing its stockholders to cover losses and meet liabilities? A farmers' factory would be run by a salaried manager with no further interest in it than the retention of his position and the regular receipt of his income. No one about it would have the keen incentive which animates the man who owns the plant he operates, and who, therefore, watches every step taken with that vigilance which is so essential to success. A farmers' factory must show a profit or it will not be operated very long, and if it shows any profit it will be because the plows it produces are sold at a higher price than those made by other manufacturers.

Perhaps the farmers expect through their alliance with the Knights of Labor to get their factory labor cheaper than other concerns and to save a considerable item of cost in that way. But is it not just as reasonable to suppose that the Knights of Labor regard the farmers as their particular friends, and that they will expect a farmers' factory to make a better schedule of wages than the ordinary employers of labor? It would seem as though such an alliance would in a short time provoke dissatisfaction, because neither party to it could secure the expected advantage.

The multiplication of factories and of merchants has been of enormous benefit to farmers by the competition thus brought about. Costs of production have been lowered to a point not dreamed of ten years since, while farm machinery has been improved in every way, being to-day lighter and stronger than ever. The manufacturers of plows and other implements have been wide awake to the improvements in other lines, and have kept up with them, while, at the same time, they have been forced to introduced economies wherever possible, in order to cut down their selling price to meet the competition of rivals. In the same way has the retail trade developed. Wherever a merchant was found doing a good business, some enterprising man has concluded that there was room for another. Margins have been cut in order to hold or to secure trade, and the farmer has been the gainer. How much better off will he be if this new policy can be continued until retail stores are leagues apart in the rural districts, and a large part of the plow and other manufacturers are forced into bankruptcy?

Steamship Subsidies.

Two subsidy bills, designed to encourage the building of American steamships for the foreign trade and to maintain established levies against foreign competition, passed the Senate recently. In this regard the pledges made by President Harrison and by others prominent in the administration are in course of fulfillment. Respecting the wisdom of this policy opinions differ widely. Reimbursement of the Government Treasury equal to the full amount of expenditures contemplated by their bills could not be hoped for. It is calculated that a single steamship of the class employed in the Brazil trade would receive at the rate of 30 cents per ton for each 1000 miles traversed, not less than $16,500 per round bound trip, and that $3 per mile for carrying the mails would about double this sum. There is nothing mean about this. The question of expediency which inevitably presents itself in this connection is somewhat involved on account of promised incidental advantages to the interests of the country at large, which, in their nature, are not demonstrable, except through practical experience. These benefits are assumed to be attainable, as a consequence of maintaining strictly independent regular steam communication with foreign markets under the American flag. Steamships thus employed, unlike those exclusively of a naval character, would be rendering valuable service commercially, and at the same time be no less available for warlike purposes, should occasion arise. The fostering of important industrial interests repsented by extensive shipbuilding plants, likewise available for the national defence, is a consideration entitled to regard.

Undoubtedly shipbuilding and cognate industries would receive a tremendous impulse; foreign markets would be more accessible; the prestige of the American name and nation would be immeasurably enhanced. Obviously there are schemes of profligate expenditure and devices for reducing the Treasury surplus more reprehensible than that now favored by the vote of the Senate. At the same time it will be confessed that the subject is much

involved, no positive concensus of opinion among our leading economists having been developed by the tedious discussion that has occupied newspapers and pamphlets at least two full decades.

Important Chicago Industrial Developments.

The erection of the Grant Locomotive Works in the immediate vicinity of Chicago is now assured. The litigation over the ownership of the proposed site has not been settled, but in case of an adverse decision the parties interested in the project will use another tract of land in the locality which they have recently purchased. For a time the probabilities seemed against the location of the works as contemplated, and that the whole scheme would be abandoned. All of the stock of the company, amounting to $800,000, has now been subscribed, of which the Grant interest takes one-half and Chicago capitalists the other half. The first board of direct will probably be constituted as follows: E. J. Jeffery, J. H. Wilson, J. F. Pierson, Morris Sellers, Willard T. Block, E. G. Keith and George M. Bogue. The stockholders state that they are prepared to go ahead with the work of preparing for the erection of the buildings and to take the chances of an adverse decision, being confident that they will win.

On an adjacent section of land the Northern Pacific Railroad propose to erect car shops. These will be of large capacity, in order to meet the necessities of the Wisconsin Central system, which constitutes the link between Chicago and St. Paul. It is further reported that the Baltimore and Ohio Railroad will erect shops in the same locality, but as yet that company have made no arrangement for the purpose. Not the least important announcement made in this connection is the intention of the Westinghouse Air Brake Company to establish a large plant at Chicago. A heavy purchase of land recently made is asserted to have been consummated in their interest. The establishment of such a plant would be an acquisition to the industrial interests of Chicago of very great consequence.

These are only a few of the enterprises projected in the vicinity of Chicago. A very large number of smaller ones are being added continually, which are swelling the industrial population and adding to the manufacturing importance of the city. Under the circumstances it is not singular that the Chicagoans look forward to the next decade to show more important results as to population and wealth than the similar census period just closed has developed.

What extraordinary questions are sometimes asked relative to the customs laws is well illustrated by the following reply by George C. Tichenor, Assistant Secretary of the Treasury, to a question from Col. A. D. Shaw, of Watertown, N. Y.: "The Department is in receipt of your letter of the 20th inst., in which, stating that you have obtained a concession for utilizing the water power on the Canadian side of the river at Niagara Falls in behalf of an American company, you request to know whether electricity transmitted by cable to the American side of the Niagara River, for lighting and power purposes, would be exempt from duty. A similar question was submitted to the Department by parties at Calais, Maine, who desired to bring electricity by wire from St. Stephen, N. B., for lighting purposes without payment of duty, and the Department decided, under date of November 8, 1887, that inasmuch as electricity was an invisible, subtle agent or power, possessing no substance as a merchantable commodity, it would not be liable to duty. Following the rule thus laid down the Department would decide that electricity brought across the Niagara River, for the purposes mentioned by you, would not be liable to duty." Absurd as it may seem, the question is one which might have proved very troublesome. The transmission of power over the border by electricity would practically become an evasion of the duty on coal. Of course, under the circumstances, it would make very little difference, since Canada has not any important coal deposits accessible to border industrial centers in this country. If it had, it might pay well to burn Canadian coal on one side of the line, saving 75 cents a ton duty and delivering its energy by cable to works on the other side.

Recently for a brief time the price of steel rails in Great Britain was very close to that ruling in this country. As an extraordinary occurrence it attracted widespread attention, but was well understood by those in the trade to be the result of the co-operation of special causes. How fugitive these causes were is pretty thoroughly shown by recent events. While our own market has held pretty well during the past month at about $31 at Eastern mill, or $32 at tide-water, the English price has totally collapsed, so that there have been heavy sales for Canada on the basis of $26.50 @ $27, delivered. Yet we expect to hear for years to come that equality of price has become the normal condition on both sides of the Atlantic.

Public interest in the natural gas question is being revived in Chicago by the announcement that arrangements have at last been perfected for piping gas to that city from the Indiana gas field. It is even stated that the city limits will be reached by the pipe line not later than November 1. In view of the non-fulfillment of previous announcements of a similar character, it is not surprising that much skepticism is manifested. Yet the names of very enterprising and wealthy citizens of Chicago are publicly connected with this latest reported scheme. If it is attempted, the gas will have to be forced through the pipes by artificial pressure from pumps. A hopeful indication of progress in the introduction of gas into Chicago for fuel purposes is the organization of companies for the manufacture of cheap fuel gas. It is quite possible that the supply will be obtained in that way a great deal sooner than by pipe line from Indiana.

Legislation on Pig Iron Warrants.

The London *Ironmonger* deals with a subject which naturally has attracted much attention in England in the following words:

Now that the committee of the British Iron Trade Association have reported in favor of legislation in connection with the speculation in pig iron warrants, it is obvious that the members of the various branches of the iron and steel trades should give the whole subject their careful consideration. It is understood that the decision of the committee has been arrived at after consultation with the Attorney-General, but to what extent that legal notability has committed himself in connection with the subject does not appear at present. The probability is, however, that the Attorney-General has only given a professional opinion upon a stated case, and has not pledged himself politically; hence the odds are that if any bill is introduced it will be a purely private measure, without other than the "benevolent neutrality" of the Government. Exactly in what direction legislative repression or regulation is to be applied is not yet set forth. Probably the committee will need a good deal more evidence as to actual transactions in warrants, before they will be able to indicate the precise method in which they propose to apply their remedies. Such evidence may very suitably be supplied to them through Mr. Jeans, the secretary of the association, by those whose actual operations in warrants have furnished them with hard facts only to be obtained in that way. In the same manner the ironmasters, whose businesses have suffered through the excessive speculation in warrants, may also be in a position to give information likely to guide and inform the committee. We have no authority for thus inviting communications, but we assume that full particulars are needed by the committee, and in the interests of the trade as an entity we know that they ought to be in possession of the whole case before they attempt to invoke the aid of Parliament. The matter is one in which *ex-parte* evidence or one-sided movements should be strongly deprecated.

Unbridled speculation in warrants is no doubt very bad for the legitimate branches of the trade; but it does not by any means follow, as a matter of course, that all speculation in those documents is to be entirely forbidden. There are frequently times when ironmasters and iron consumers are compelled by the exigencies of their businesses to purchase warrants in order to cover their sales of, or contracts for, finished materials. Such purchases are therefore quite legitimate, and cannot be interfered with in any way. It is argued by some that all buying on the "bull" side, or for a rise in prices, is perfectly right and reasonable, but that sales by the "bears," for a fall in prices, should be strictly prohibited. On the face of it this may seem to be a fair contention; but if a merchant, when prices are, say 50/, likes to sell a month ahead for 47/ or 46/, in the belief that values will fall sufficiently to enable him to buy in at a profit, it does not seem to be quite reasonable, or even fair, to prohibit him from adopting that course. Then, again, it must not be forgotten that if it suits the producers of pig iron for prices to be kept up, it does not follow, by any means, that the consumers of pig iron are equally well suited —indeed, when a certain upward limit is exceeded, the interests of consumers are often seriously prejudiced.

But even the consumers are not benefited by the violent fluctuations resulting from excessive speculation; hence they are concerned in such regulations as can be carefully and practically applied. Probably the application of provisions similar to those contained in Leeman's Bank Share act might be useful, thereby prohibiting the sale of warrants, unless the actual documents changed hands every time. That provision would probably put a stop to the speculation on margins or differences, and it ought also to very effectually prevent there being an "oversold account" at Glasgow of from 400,000 to 600,000 tons of warrants. As is very well known, in the majority of speculative transactions the warrants never change hands at all, the only documents passing between the brokers and their clients being the bought and sold notes. The actual warrants may be said to be "at the back of" these transactions, but that there is often a very hollow market is proved by the statement that six months ago, when warrants for only some 900,000 tons were in existence, the sales covered some 2,000,000 tons, or more. Thus the inflation was created, and because of its hollowness it was pricked when the "bears" sold right and left at constantly declining prices. But while these bad features crop up from time to time, we venture to suggest to the committee that they should "make haste slowly," and not attempt to do too much. No extremely drastic measure can get through Parliament, whereas a modest and businesslike bill, specially devoted to procuring the delivery of the actual warrants bought or sold, might be run through quickly and easily.

The Blast Furnaces on July 1.

As the figures given in detail elsewhere show, the current production of pig iron at the beginning of this month exhibited a decline in the rate of output. This was partially due to lighter make on the part of some of the large plants.

As compared with previous months the record stands as follows:

	Furnaces in blast.	Capacity per week. Gross tons.
July 1	336	175,727
June 1	345	180,791
May 1	344	180,099
April 1	344	178,474
March 1	343	180,991
February 1	334	173,651
January 1	333	174,088
December 1	328	169,151
November 1	323	165,225
October 1	311	151,057
September 1	294	134,068
August 1	286	145,899
July 1	285	141,419
June 1	286	137,119

The figures indicate a production during the first half of 1890 of 4,610,000 gross tons.

In detail the status of the Anthracite furnaces was as follows:

Anthracite Furnaces, July 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	23	9	3,269	14	3,625
New Jersey	14	6	2,656	8	2,855
Spiegel	3	3	206	0	0
Pennsylvania:					
Lehigh Valley	45	36	13,515	10	3,172
Spiegel	1	1	55	0	0
Schuylkill Valley	37	21	8,491	16	4,845
U. Susquehanna Valley	18	12	3,732	6	2,120
Lebanon Valley	16	12	5,149	4	2,007
L. Susquehanna Valley	16	10	4,920	6	1,465
Spiegel	2	2	650	0	0
Totals	175	112	42,543	64	20,089

For the past 15 months our records show the following:

	Furnaces in blast.	Capacity per week.
July 1	112	42,543
June 1	117	45,142
May 1	123	46,912
April 1	119	46,110
March 1	115	45,790
February 1, 1890	107	43,905
January 1, 1890	105	42,857
December 1	100	40,053
November 1	96	40,603
October 1	94	36,558
September 1	93	35,997
August 1	88	34,277
July 1	89	34,142
June 1	91	34,386
May 1	95	35,315

It will be observed that quite a number of furnaces have blown out in June. Among them were one of the Port Henry, one Andover, one Brooke and one Allentown, a lesser number having resumed.

The coke furnaces stood as follows in the beginning of the month:

Coke Furnaces, July 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	4	3	2,954	1	550
Pennsylvania:					
Pittsburgh district	21	19	23,112	2	1,988
Spiegel	1	1	833	0	0
Shenango Valley	19	17	12,588	2	1,400
Juniata and Conemaugh Valley	17	11	6,055	6	3,685
Spiegel	1	0	0	1	500
Youghiogheny Val	5	3	1,501	2	895
Miscellaneous	4	2	1,166	3	1,180
Maryland	5	2	3,640	3	3,830
West Virginia	6	3	2,673	3	770
Ohio:					
Mahoning Valley	14	12	10,133	2	1,400
Central and Northern	18	14	10,367	4	3,340
Hocking Valley	15	4	1,444	9	2,300
Hanging Rock	14	7	1,488	7	1,242
Indiana	2	1	250	1	130
Illinois	14	12	13,083	2	2,130
Wisconsin	4	3	2,467	1	370
Missouri	6	2	1,532	4	2,150
Colorado	2	1	450	1	450
The South:					
Virginia	13	11	5,930	2	930
Kentucky	4	3	868	1	310
Alabama	36	23	14,029	13	8,233
Tennessee	11	6	3,146	5	2,170
Georgia	2	2	819	0	0
North Carolina	1	1	125	0	0
Totals	239	163	120,673	84	39,934

As compared with the 15 previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
July 1	163	120,673
June 1	167	123,340
May 1	169	122,489
April 1	173	121,560
March 1	169	122,595
February 1	169	118,368
January 1, 1890	169	119,396
December 1	162	116,319
November 1	160	112,269
October 1	154	102,454
September 1	141	96,744
August 1	137	96,720
July 1	136	96,584
June 1	135	91,771
May 1	147	98,399

The coke furnaces, too, show a reduced production. In June one Dunbar, in Pennsylvania. In the Shenango Valley Claire and the second Stewart resumed. Powlton has now both idle. In Central and Northern Ohio June product was light in a number of plants. In the Hanging Rock Hamilton blew out, while in the Hocking Valley Winona started in the place of Akron, which stopped. In the Mahoning Valley Thomas went out. The product of the Valley for the first six months was 264,434 gross tons. Illinois shows no changes, its total product for the first six months aggregating 315,318 tons. In Wisconsin Maryville stopped, and Brazil blew out in Indiana. In Missouri all the furnaces of the St. Louis Ore and Steel Company are now idle. In Virginia the second Longdale and Ivanhoe resumed during June. In Alabama both Eureka, two Sloss, one Ensley, and Trussville were idle on the 1st inst. In Tennessee Citico and one Rockwood were not producing.

The status of the charcoal furnaces was as follows:

Charcoal Furnaces, July 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England	14	6	520	8	570
New York	8	2	284	6	633
Pennsylvania	16	4	380	12	690
Maryland	6	2	204	4	410
Virginia	18	3	134	15	740
Ohio	11	7	386	4	170
Kentucky	2	1	112	1	100
Tennessee	6	4	1,030	2	130
Georgia	3	2	338	1	80
Alabama	14	9	2,080	5	1,387
Michigan	24	14	4,652	10	2,310
Missouri	2	2	612	0	0
Wisconsin	6	3	1,389	3	710
Texas	1	1	170	0	0
California	1	0	0	1	120
Washington Ter'y	1	0	0	1	170
Oregon	1	1	260	0	0
Total	134	61	12,511	73	8,240

As compared with previous months, the year began as follows:

	Furnaces in blast.	Capacity per week.
July 1	61	12,511
June 1	61	12,312
May 1	52	10,698
April 1	52	10,804
March 1	59	12,606
February 1	53	11,378
January 1, 1890	59	11,486
December 1	66	12,779
November 1	67	12,893
October 1	63	12,047
September 1	60	11,337
August 1	61	11,902
July 1	60	10,727
June 1	60	10,962
May 1	54	10,629

There have been few changes. In Pennsysvania, Hecla has gone out for a new hearth and inwalls. In Maryland, Muirkirk blew out for want of charcoal. In Kentucky, Bellefonte is again running. In Michigan, Eureka stopped its second furnace on the 2d inst. Gaylord is again running. Minneapolis stopped on the 23d ult. In Alabama, Gadsden and Tecumseh were idle on the 1st. Attalla and Round Mountain started in June.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., July 22, 1890.

The Senate, after a full month's delay since the Committee on Finance reported the Tariff bill with amendments, and two months after the passage of the bill by the House, has commenced the discussion of that measure. The Republican members of the committee will submit a simple statement of the operations of the bill, and will then permit the Democrats to relieve themselves of their speeches. Every member of the minority has fortified himself with a speech, which he will deliver some time during the round of hostile oratory which has been marked out by the managers. Senator Voorhees, of Indiana, opened the parliamentary contest in an elaborate speech, which seemed to be inspired more by a desire to display his powers of bitterness, censure and condemnation than his skill in logic. In 1882, Senator Vorhees was one of the conservatives in the Democratic ranks of the distinguished body of which he is a member, and relieved himself of an able speech against the applicability of free trade to American industrial and labor commodities. His speech yesterday was hardly a credit to his consistency or statesmanship. The Senator succeeded in consuming time, but he did not add anything to his fame as an orator. He is usually a very careful and eloquent speaker, but

this time he did not come up to his usual standard. The fact that the whole subject of the tariff was fully discussed during the long session of 1888 leaves little to be said on the subject that will be new.

The programme of the majority is to permit the general speeches to go on for a reasonable time, after which a motion will be made to close general debate and take up the bill for amendment, each Senator being allowed 30 minutes only under the new rule, and to fix a time when a vote shall be taken. The majority are in earnest about the passage of this bill, and hope to be able to do so without resorting to the extreme methods proposed in order to stop talk for dilatory purposes.

After setting forth their position the minority would be perfectly willing to permit the Tariff bill to come to a vote if it were not for the Federal Election bill, which the majority also propose to pass. Senator Carlisle claims that four weeks would not be an unreasonable period for the discussion of the Tariff bill, as all the great measures of that character have consumed a longer time than that now proposed, and it was never considered dilatory. The majority are not disposed to enforce any summary process if it can be avoided. Their own members are not united on that subject. At least six Senators doubt the expediency of undertaking to introduce into the parliamentary methods of the Senate the summary curtailing processes of the House. It is apparent that the advocates of cutting off debate do not expect to undertake to enforce the rule, except as a last desperate resort.

Unless there should be an unexpected collapse of the programme of the majority there is no expectation of finishing up legislative business in the Senate before October. The House meanwhile is making its preparations to take up the returns of population under the Tenth Census, and fixing the rate of representation in the House of Representatives for the next decade, and making the same applicable to the Congressional elections of the present year.

PERSONALS.

I. Grove, of the Brier Hill Iron and Coal Company, Youngstown, Ohio, has resigned to accept the position of general manager of the Colorado Coal and Iron Company, at So. Pueblo, Col.

Harrison Bortz has been reappointed superintendent of the Lehigh Iron Company's furnaces at Allentown, Pa. Mr. Mortz has been connected with the furnaces for 20 years, but resigned a year ago on account of ill health.

Prof. James Russell Soley, nominated to be Assistant Secretary of the Navy, was born in Massachusetts about 40 years ago, and was graduated from Harvard University.

Edward Burke, of the Lowell Machine Shop, Lowell, Mass., sailed for Europe the past week from Boston, on the Cunard steamer Cephalonia.

H. A. Pevear, president of the Thomson-Houston Company, has started on a trip to Alaska.

Capt. R. T. Devier, of Wheeling, W. Va., who for seven years past has been a director of the Bellaire Nail Works, of Bellaire, Ohio, has been made vice-president of that company, to co-operate with James Wilson, president, and A. B. Carter, secretary.

L. E. Cochran, president of the Andrews Bros. Company, of Youngstown, Ohio, is taking a well-earned vacation from the cares of business. He and his wife have gone to spend the summer on the Isle of Wight, in the English Channel.

J. N. Whitman is now at Pomeroy, Ohio, with Cartwright, McCurdy & Co.

George Oliver, of Oliver & Roberts Wire Company, Pittsburgh, has gone abroad.

OBJECTIONABLE BILLS OF LADING.

A special meeting of the Chamber of Commerce was held to discuss an objectionable form of bills of lading about to be adopted by the Central Traffic Association, and about to be issued by the railroad companies. The chief points making this form objectionable are that the bills are not negotiable, and that the companies assume no liability for loss or damage to goods. Resolutions were adopted protesting against such bills of lading. Chairman Blanchard, in order to quiet the misapprehension which exists among shippers, has written a long letter in explanation. He contends many difficulties have been caused by the diverse decisions of State and United States courts, but touching the question of negotiability the committee has been furnished the following opinion of counsel:

The sense of the word "negotiable" in mercantile law is that the maker must carry out the contract stated in the paper, upon the demand of the *bona fide* holder, without being able to avail himself of any of the equities which might have existed between such maker and person with whom the contract was originally made.

The Supreme Court of the United States held:

"That where through the fraud or mistake of an agent a bill of lading has been issued and no property received, the carrier can show the facts and avoid responsibility upon such bill of lading, even against the claim of a *bona fide* holder of such bill of lading. If, however, the bill of lading was negotiable, such a defense would be cut off."

The Supreme Court, Mr. Blanchard continues, has also decided that a bill of lading is not negotiable in the commercial sense, as negotiability attaches to bank notes, warehouse receipts, checks drawn to order, &c. The use of the words "not negotiable" by the new form does not, therefore, affect its legal character as determined by the United States Supreme Court, but confirmed thereto. The laws of New York, Pennsylvania and other States require carriers therein to take up all bills of lading for property originating and delivered within their borders, unless the words "not negotiable" are plainly printed upon them. To enforce this legal requirement would blackade the railway commerce of those days in a week, in which event the railways and not the laws could be assailed. Commercial exigencies, however, oblige carriers, in the interest of senders and receivers, to violate those laws repeatedly, which they do at their own risk; and, although they have heretofore assumed them, they should not issue or be parties to bills of lading which disregard or neglect the law; nor should their bills of lading actually or interentially assume or submit to risks and responsibilities which form no part of their duties as carriers. The new bill of lading has already been put in force without objection westwardly from New York and the seabord cities on the merchandise traffic, which is of great value. The Southern Railway and Steamship Association has also adopted it.

The following is the bill of lading as adopted by the Rate Committee of the Southern Railway and Steamship Association:

....

.....Station.....189..

Received.....189.....from.....

By.....the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned and destined as indicated below, which said company agrees to carry to the said destination, if on their road or their portion of the through route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, in consideration of the rate of freight hereinafter named, as to each carrier of all or any of said property over all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained, and which are hereby agreed to by the shipper, and by him accepted for himself and his assigns as just and reasonable.

CONDITIONS.

NOT NEGOTIABLE.

1. No carrier or party in possession of all or any of the property herein described shall be liable for any loss thereof or damage thereto by causes beyond their control; or by floods or by fire from any cause or wheresoever occurring; or by quarantine, riots, strikes or stoppage of labor; or by leakage, breakage, chafing, loss in weight, changes in weather, heat, frost, wet or decay; or for country damage on cotton; or from any cause if it be necessary or is usual to carry such property upon open cars.

2. No carrier is bound to carry said property by any particular train or vessel, or in time for any particular market, or otherwise than with as reasonable despatch as their general business will permit. Every carrier shall have the right, in case of necessity, to forward said property by any railrord or route between the point of shipment and the point to which the rate is given.

3. No carrier shall be liable for loss or damage not occurring on its own road or its portion of the through route, nor after said property is ready for delivery to the next carrier or to consignee. The amount of any loss or damage for which any carrier becomes liable shall be computed at the value of the property at the place and time of shipment under this bill of lading, unless a lower value has been agreed upon or is determined by the classification upon which the rate is based, in either of which events such lower value shall be the maximum price to govern such computation. Claims for loss or damage must be made in writing to the agent at point of delivery promptly after arrival of the property, and if delayed for more than 30 days after the delivery of the property, or after due time for the delivery thereof, no carrier hereunder shall be liable in any event.

4. All property shall be subject to necessary cooperage and baling at owner's cost. Each carrier over whose route cotton is to be carried hereunder, shall have the privilege, at its own cost, of compressing the same for greater convenience in handling and forwarding, and shall not be held responsible for unavoidable delays in procuring such compression. Grain in bulk consigned to a point where there is an elevator may (unless otherwise expressly noted herein, and then if it is not promptly unloaded) be there delivered and placed with other grain of same kind, without respect to ownership, and if so delivered shall be subject to a lien for elevator charges in addition to all other charges hereunder. No carrier shall be liable for differences in weights or for shrinkage of any grain or seed carried in bulk.

5. Property not removed by the person or party entitled to receive it within 24 hours after its arrival at destination may be kept in the car, depot or place of delivery of the carrier, at the sole risk of the owner of said property, or may be at the option of the carrier removed and otherwise stored at the owner's risk and cost, and there held subject to lien for all freight and other charges. The delivering carrier may make a reasonable charge per day for the detention of any car and for use of track after the car has been held 48 hours for unloading, and may add such charge to all other charges hereunder, and hold said property subject to a lien therefor. Property destined to or taken from a station at which there is no regularly appointed agent shall be entirely at risk of owner when unloaded from cars, or until loaded into cars; and when received from or delivered on private or other sidings, shall be at owner's risk until the cars are attached to, and after they are detached from, trains.

6. No carrier hereunder will carry, or be liable in any way for any documents, specie or for any article of extraordinary value not specifically rated in the published classifications, unless a special agreement to do so, and a stipulated value of the articles, are endorsed hereon.

7. Every party, whether principal or agent, shipping inflammable, explosive or dangerous goods, without previous full written disclosure to the carrier of their nature, shall be liable for all loss or damage caused thereby, and such

goods may be warehoused at owner's risk and expense, or destroyed without compensation.

8. An alteration, addition, or erasure in this bill of lading, which shall be made without the special notation hereon of the agent of the carrier issuing this bill of lading, shall be void.

9. If the word "order" is written hereon immediately before or after the name of the party to whose order the property is consigned, without any condition or limitation other than the name of a party to be notified of the arrival of the property, the surrender of this bill of lading, properly indorsed, shall be required before the delivery of the property at destination. If any other than the aforesaid form of consignment is used herein, the said property may, at the option of the carrier, be delivered without requiring the production or surrender of this bill of lading.

10. Owner or consignee shall pay freight at the rate below stated, and all other charges accruing on said property before delivery, and according to weights as ascertained by any carrier hereunder; and, if upon inspection it is ascertained that the articles shipped are not those described in this bill of lading, the freight charges must be paid upon the articles actually shipped, and at the rates and under the rules provided for by published classifications.

11. If all or any part of said property is carried by water over any part of said route, such water carriage shall be performed subject to the conditions, whether printed or written, contained in this bill of lading, including the condition that no carrier or party shall be liable for any loss or damage resulting from the perils of the seas, lakes or other waters, or from explosion, accident to boilers or machinery, or any latent defect in hull, machinery or appurtenances, or from collision, stranding or other accidents of navigation, delay, or from any cause, if it necessary or is usual to carry such property on deck.

The carrier shall have liberty to transfer, tranship, lighter, call at any port or ports, to tow and be towed, to assist vessels in distress, to deviate for the purpose of saving life or property, to navigate without pilots, and to load and discharge goods at any time. If property, or any portion thereof, is landed by agreement at any other place than the regular wharf, it shall be at the risk of the owner immediately upon such discharge, and any property destined to or taken from a wharf or landing at which there is no regularly appointed agent shall be entirely at risk of owner when unloaded from or until loaded into vessel.

If by quarantine a carrier is prevented from forwarding the within goods to destination he may discharge goods at the nearest convenient port, and such discharge shall be deemed a final delivery under this contract. If prevented by quarantine from landing at any port he may, at his option, return the goods to shipping point, earning freight both ways and all charges accruing of whatsoever nature.

It is agreed that if any goods are sold short of ultimate destination the portion of the through freight due each carrier for that part of the transportation which may have been completed shall be earned, with charges advanced.

The following rules accompany the document:

RULES.

Rule 1. The full conditions of the uniform bill of lading shall appear on all dray tickets and shipping receipts, and if printed on back of dray tickets notice of reference to conditions shall be in bold type and different colored ink.

Rule 2. The following rule will be printed in the classification: "Property will be carried at reduced rates as hereinafter shown, if subject to the conditions of the uniform bill of lading. If shipper elects not to accept the said reduced class rates and conditions, he should so notify the agent of the receiving carrier at the time his property is offered for shipment, and if he does not give this notice it will be understood that he does desire his property carried subject to bill of lading conditions in order to secure the reduced class rate thereon. Property not carried subject to bill of lading conditions will be at the carrier's liability, limited only as provided by common law and by the laws of the United States and of the several States in so far as they apply. Property thus carried is one class higher than property carried subject to the conditions of the uniform bill of lading."

Rule 3. The following should be printed or stamped on dray tickets, receipts of bills of lading for property not subject to the uniform bill of lading: "In consideration of the higher rate charged the property will be carried at the carrier's liability, limited only as provided by common law and by the laws of the United States and of the several States in so far as they apply."

Rule 4. It being considered desirable that a uniform practice should prevail in regard to issuing copies of bill of lading, it is recommended that the following notation be printed on such copies in bold tpye and different colored ink from the terms and conditions: "*Take Notice* that this is only a copy of a bill of lading issued for the property herein described or referred to, and it is not itself to be regarded or construed as a bill of lading or a contract of any kind under any circumstances, but merely an acknowledgment that a bill of lading for said property has been issued."

Rule 5. All bills of lading to be printed in black ink.

Rule 6. The use of bills of lading printed by shippers is improper, and agents of transportation lines and members of the association at stations within the association boundaries must not receipt for shipments upon any other bill of lading or dray receipt blanks than those furnished by the company they represent.

The Sigua Mines.

The Sigua iron ore mines, of Cuba, to which reference has been repeatedly made in *The Iron Age*, are to be developed by the Sigua Iron Company, of Philadelphia. The principal men interested are: E. W. Clark & Co., B. Frank Clyde, Samuel A. Crozer, John Thomas, A. J. Dull, George F. Tyler, Sidney F. Tyler, Henry Levis & Co., John B. Lennig, Stuart Wood, John C. Sims, Jr., F. J. Kimball, Vivian Gray & Co., London; Blake, Boissevain & Co., Amsterdam; Robert Fleming, Glasgow; Samuel Dickson, Edmund D. Smith & Co., William M. Joyce, Richard S. Brock, Clarence M. Clark, Rattle & Nye, Cleveland; Edward V. D'Invilliers, William T. Tiers, J. D. Sergeant, Virginia Development Company, Second Virginia Syndicate, Virginia Investment Association. The officers of the company are: S. H. Chauvenet, president; Thomas H. Graham, vice-president; George F. Baker, secretary and treasurer; Captain B. D. Greene, chief engineer.

The mines are about 22 miles east of Santiago, on the south side of the island, and are in the Sierra Maestra Mountains. The Sigua Mines were discovered some time ago, but it was not until the present year that the owners were successful in interesting the necessary capital to develop them. The capital of the new company is $5,000,000, fully subscribed. Last winter a syndicate was formed by Edmund D. Smith, and a committee representing the syndicate visited Cuba, and after a careful examination made a favorable report on the property on which they held an option. The deposit of ore is all above tidewater, and requires simply open quarrying. The cost of getting the ore out, bringing it a short distance of seven or eight miles over the company's own railroad to the coast, and thence transporting it in steamers to United States ports will be very low.

The company's engineer has located a railroad from the mines to the mouth of the Sigua River, at which point it is proposed to put in a breakwater and make a safe harbor for seagoing steamers. The company have also purchased some 38,000 acres of land in and around the mines, giving them, in this possession, 12 miles of seacoast. The company expect to begin shipments of ore early next year. There are two plans for the transportation of the ore to the United States ports; one is by means of ocean going steamers that are chartered by the month, and the other by means of barges made of steel on a new principle and lately initiated in the Lake Superior trade on the great lakes. Two of these barges are now being constructed in New York at the Erie Basin, and the results of these experiments will be followed with interest by every one interested in the transportation business.

The Basic Process in Germany.—Some interesting figures relating to the progress in Germany have been lately compiled by Herr Kintzle in a paper read before the Aix-la-Chapelle section of the Verein Deutscher Ingeineure. For a series of years the product was as follows in metric tons:

Year.	Puddled iron.	Total steel.	Basic steel.	Acid steel.
1883	1,517,410	1,060,592	260,000	860,000
1884	1,592,961	1,138,499	.....	.....
1885	1,504,072	1,202,000	406,000	742,000
1886	1,414,611	1,376,356	700,000	676,000
1887	1,624,978	1,738,404	900,000	838,000
1888	1,644,442	1,862,676	1,020,000	842,000
1889	1,650,427	2,046,000	1,200,000	846,000

There are now running in Germany 14 works with 50 converters on basic steel, only three of which partially employ the acid method. Only three steel works with eight or ten converters use the acid process exclusively.

SOUTHERN MISCELLANY.

It is stated that the Newport Iron and Steel Works, at Newport, Ky., are likely to pass into the hands of a company, to be composed of capitalists from Covington, together with citizens of Newport. These parties have an option on the property which is said to expire early in August, by which time a final decision will be reached.

The Bessemer Machine and Foundry Company have been organized at Bessemer, Ala., to absorb and operate the plant of G. W. Beggs & Bro. The incorporators are J. P. and G. W. Beggs, J. E. Lee and others, and the capital stock is $100,000.

The equipment of the Rome, Ga., Machine and Tool Works has been sold to G. A. George, who intends establishing a new foundry and machine shop.

August 5 is the date of a meeting called at Sheffield, Ala., of the Albany Iron and Railway Company. The object of the gathering will be to decide on issuing $300,000 of bonds to put their three coke furnaces into blast and to develop their property.

The Cartersville Land and Manganese Company, of Cartersville, Ga., have finally decided to erect an iron furnace and an iron foundry.

An iron foundry is to be added to the plant of the W. E. Moffatt Mfg. Company, at Chester, S. C.

The Troy Iron Works, recently destroyed by fire at Troy, Ala., are to be rebuilt without delay.

A machine shop has been erected at Chattanooga, Tenn., by the Southern Mfg. Company.

A company is organizing at Sykesville, Md., to establish a plant for the purpose of manufacturing Day's Climax, all steel cultivator, and other agricultural implements.

The machine shops of the South Atlantic and Ohio Railroad Company, at Bristol, are being enlarged.

A foundry and machine shop is to be erected at Spartanburgh, S. C., by Beard & Son.

A car works company, with $200,000 capital stock, has been organized at Montgomery, Ala., by Charles Webster, of Phillips, Wis., John Burr, of Stevens' Pottery, Wis., Edward Gilbert, of Oshkosh, Wis., and others.

It is reported at New Orleans that the Louisville and Nashville Railroad Company intend erecting extensive machine shops on the Gentilly road.

The machine shops of the Fort Worth and Denver City Railroad Company, situated at Clarendon, Texas, will be enlarged and improved.

At Lawrenceburg, Tenn., J. P. Gay and others, under the corporate title of the Smithdale Iron Company, will build one or more iron furnaces, and G. T. Hughes and others, of Columbia, Tenn., will also build a furnace at that place.

The Glasgow Land and Improvement Company, with a capital stock of $250,000, have been organized at Glasgow, Ky., to develop iron and coal properties and sink wells for oil and gas.

A site has been selected for the furnace of the Gracey-Woodward Iron Company, at Clarksville, Tenn., and work on the plant will be commenced shortly.

The Raleigh and Gaston Railroad Company contemplate large additions to their machine shops located at Raleigh, N. C.

The Southern Investment Company, with J. J. Burns, of Chicago, president, will develop iron ore properties, near Hohenwald, Tenn., and intend building in that vicinity an industrial town.

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., July 22, 1890.

Pig Iron.—Business remains in the same lifeless condition as noted for some weeks past. Small lots are taken pretty freely, and the aggregate of these is sufficient to prevent much accumulation; but the feeling is extremely apathetic, and neither side seem disposed to enter into any engagement beyond covering their immediate requirements. On the whole prices are steady, and from the fact that there is no great pressure to sell, it may be supposed that a little extra demand would easily lead to a stiffening in values. But for the present the trade are simply waiting developments, so that it is impossible to say what the outcome will be. Sales of Foundry Irons continue to be made on the basis of $18 @ $18.50, delivered, for No. 1; $16.50 @ $17 for No. 2, and ¢15.50 @ $15.75 for Grey Forge. On large lots these prices may perhaps be shaded a trifle, but brands of established character are firmly held at the figures named. New brands or anything not strictly up in quality (or when cash payment is a close condition) can only be placed by making concessions, but no important transactions of this kind have been reported recently. Still, in giving quotations for standard qualities, it is well to bear in mind that other Irons can be made available at less money. A sale of 2500 tons Grey Forge was made to-day at an advance of 25¢ ℔ ton on price ruling two weeks ago; cost to buyer a little over $15.50 delivered in his yard,

Bessemer Pig.—Nothing doing. Prices are nominally $19 @ $19.50, at furnaces, but no sales have been reported of late. Makers are more disposed to talk business, and while there is no large accumulation of stocks, bids of $19 @ $19.50, at furnace, would not be likely to wait long for acceptance. Consumers appear to be quite indifferent, and at the moment show no disposition to renew their contracts.

Spiegeleisen.—There is some inquiry for this article, but large buyers talk very little over $30, duty paid, for 20 %. Sellers quote about $31 @ $31 50, but would probably shade a trifle on a firm offer for a round lot.

Steel Rails.—The market shows very little change from last week and is as dull as it well can be, considering the general condition of business. Most of the mills are running to their full capacity, partly on old orders, partly on new business and still more perhaps on Blooms, Billets, &c. Prices are fairly steady at about $31.50 @ $32.50 at mill for rail orders, sales chiefly in small lots at the outside figure.

Steel Billets.—No business of importance during the past week. It is reported that several thousand tons of German Billets have been placed at $32.50 at tide duty paid, which is about equivalent to what mills in the neighborhood have been quoting. Consumers are a little inclined to hold off to see what effect this transaction will have. Meantime mills are full of orders for some weeks to come and on new business quote about $33 @ $33.50 delivered in consumer's yards.

Muck Bars.—The market is not active, but the light offering enables sellers to realise $29 at mill, or $29.50 delivered. A 500-ton lot was taken to-day at the latter figure, with very little more stock for sale at less than $29.75 @ $30.

Bar Iron.—Without any great increase in the demand, prices are firmer. Work at the mills has been suspended to such an extent during the past two or three weeks that orders have accumulated, so as to cause some little crowding, and this is more especially the case, because some mills are still closed pending a settlement of the wage question. Mills that have started up are therefore well supplied with work, and for the time being have a very good demand, but as already intimated it is more because of a decrease in production than to increase in consumption. Still, there is a moderately good outlook for the remainder of the year, with prices steady at from 1.80¢ to 1.85¢ at mill for best refined Iron, and 1.90¢ to 2¢ from store.

Skelp Iron.—There is a good deal of inquiry, and at 1.75¢, delivered, for Grooved, and at about 2¢ for Sheared a large business could be done. Sellers quote 1.80¢ and 2.7¢, but sales so far have usually been at some concessions from these figures.

Plates.—There is a very good demand for Plates, and mills are all crowded with work. It is true that two or three large concerns have not resumed operations since the midsummer suspension of work, and that fact alone throws a good deal of extra work on those that are running; but apart from that there is a very good demand, with excellent prospects for its continuance. Prices are firm, and so far as reported nothing can be had for less than 2 05¢ @ 2.15¢ at mills for ordinary Plates, and for lots delivered in consumers' yards about as follows:

	Iron.	Steel.
Ship Plates	2.15 @ 2.25¢	2.30 @ 2.40¢
Tank	2.15 @ 2.25¢	2.35 @ 2.45¢
Bridge Plate	2.20 @ 2.30¢	2.40 @ 2.60¢
Shell	2.40 @ 2.50¢	2.60 @ 2.70¢
Flange	3.00 @ 3.10¢	2.80 @ 3.00¢
Fire-Box	3.75¢	3.75 @ 4.25¢

Structural Material.—Mills are very full of work, and in many cases have as much as they can handle for the next three or four months. Prices are firm and usually quoted about as follows for lots delivered in consumers' yards: 2.25¢ @ 2.30¢, delivered, for Sheared Plates; 2.20¢ @ 2.25¢ for Angles, with 15¢ @ 25¢ more for the same in Steel; Tees, 2.6¢ @ 2.7¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—Business continues active, mills in some cases having contracted for their entire product during the balance of the year. Prices steady and unchanged, for carload lots of the best make:

Best Refined, Nos. 14 to 20	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24	3.20¢ @ 3.30¢
Best Refined, Nos. 25 to 26	3.40¢ @ 3.50¢
Best Refined, No. 27	3.50¢ @ 3.60¢
Best Refined, No. 28	3.60¢ @ 3.70¢
Common, ¼¢ less than the above.	
Best Soft Steel, Nos. 14 to 20	3¼¢ @ 3½¢
Best Soft Steel, Nos. 21 to 24	3⅜¢ @ 3¾¢
Best Soft Steel, Nos. 25 to 26	3¾¢ @ 3⅞¢
Best Soft Steel, No. 27	4¢ @ 4⅛¢
Best Bloom Sheets, 1-10¢ extra over the above prices.	
Best Bloom, Galvanized, discount	60 @ 62½ %
Common, discount	62½ @ 67½ %

Old Rails.—There is absolutely nothing doing, and very little interest is shown by either holders or consumers. There is little doubt that $25 would be paid for Philadelphia, or $25.50 @ $26 at interior points, but holders seem unwilling to name prices, as they are believers in higher quotations. Meanwhile its a stand off on both sides.

Scrap Iron.—Market very dull, and consumers not in the market to any extent at the usual prices, which are about as follows, viz: No. 1 Wrought, $21.50 @ $22 Philadelphia, or for deliveries at mills in the interior, $22 @ $23; $16 @ $17 for best Machinery Scrap, $15 @ $15.50 for ordinary, $15.50 @ $16.50 for Wrought Turnings, $11 @ $11.50 for Cast Borings, $25 @ $27 for Old Fish Plates, and $17 @ $18 for Old Car Wheels. At a forced sale of Car Wheels the price obtained was $16 in the interior.

Wrought Iron Pipe.—The demand is well maintained, and mills fully employed in meeting calls for prompt delivery. Prices steady and firm. Discounts as follows: Butt-Welded Black, 47½ %; Butt-Welded Galvanized, 40 %; Lap-Welded Galvanized, 47½ %; Lap-Welded Black, 60 %; Boiler Tubes, 1¼ inches and smaller, 45 %; Boiler Tubes, 2 to 4 inches, 50 %; Boiler Tubes, 4½ inches and larger, 52½ %; Oil Well Casing, 50 %.

Chicago.

(*By Telegraph.*)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, July 23, 1890.

The volume of trade is very heavy for midsummer. Orders are pouring in for all kinds of finished products, and manufacturers, agents and dealers are very busy. The demand is unusually large for the season, and vacations are taken under difficulties. Complaints are frequent that mills and factories are not shipping on contracts with anything like their usual promptness. Under the circumstances it would be expected that prices would be firmly maintained, but soft spots occasionally develop even in lines where there is most activity, and for which there is apparently no justification

Pig Iron.—The market continues moderately active, and 1000-ton lots of both Coke and Charcoal have been sold the past week. An effort is being made by the largest local producers to advance prices on Coke Iron on the ground that higher prices for this season's Ore are swelling cost sheets, and that Pig Iron is therefore worth more money than it has recently brought. It remains to be seen how long and how firmly this position will be maintained in view of the fact that Southern Coke Iron is weaker. The leading Southern makers are said to be firm, as they still have well-filled order books; but the small companies are making concessions, and our quotations can be shaded in such cases at least 25¢. While Lake Superior Charcoal can still be bought at our inside figures, some of the largest makes are firm at $20, and report good sized sales at that price. Ohio softeners are selling quite freely, but usually in small lots. At present inquiries are being received to a considerable extent for all classes of Pig Iron, but the quantities named are not so large as they have been, reaching 500 tons in but few instances.

Quotations are as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal	$19.50 @ $20.00
Local Coke Foundry, No. 1	16.50 @ 17.50
Local Coke Foundry, No. 2	16.00 @ 17.00
Local Coke Foundry, No. 3	15.50 @ 16.00
Bay View Scotch	18.00 @ ....
Am. Scotch (Strong Soft), No. 1	19.75 @ 20.50
Jackson County, Soft and Silvery, No. 1	18.00 @ 18.50
Southern Coke, No. 1	16.50 @ ....
Southern Coke, No. 2	16.00 @ ....
Southern Coke, No. 3	15.50 @ ....
Southern, No. 1, Soft	16.00 @ ....
Southern, No. 2, Soft	15.00 @ ....
Southern Gray Forge	15.00 @ ....
Southern Mottled	14.00 @ ....
Tennessee Charcoal, No. 1	19.00 @ ....
Missouri Charcoal, No. 1	18.50 @ ....
Alabama Car Wheel	22.50 @ 24.00

Bar Iron—Is in strong demand and sales have been made of mill lots at 1.85¢, half extras, Chicago. Good specifications have been placed at 1.80¢, in the face of the fact that heavy buyers claim to be able to place orders at less money. Makers insist that 1.80¢ is now absolute bottom, and they are careful about taking orders at that price, believing that they will get more money shortly. Mahoning Valley mills ask 1.70¢ @ 1.75¢, at mill, and report themselves well supplied with orders. The stiffness in the Bar Iron market interferes with the placing of the large season contracts by agricultural works, and the chances now are that none of them will be placed for some time. Manufacturers profess to be well satisfied if they

are not placed at all. as there will then be a steady demand from that source through the year, which may materially strengthen the market. Stores quote small lots 2¢ @ 2.20¢, full extras.

Structural Iron.—Structural Iron is selling very freely and prices are strong. The following quotations prevail on carload lots, f.o.b.: Angles, 2.30¢; Tees, 2.75¢ @ $2.80¢; Beams, 3.20; Universal Plates, 2.45¢ @ 2.55¢; Sheared Plates, Iron, 2.50¢ @ 2.60¢; Steel, 2 60¢ @ 2.70¢; Car Truck Channels, 2.50¢. Beams sell from store in small lots at 3.70¢, but Angles and Tees at 10¢ @ 15¢ ₱ 100 above carload prices.

Plates, Tubes, &c.—A heavy business is reported by local dealers, consisting principally of small orders. Prices are very stiff. An early advance by the mills is expected, which will, of course, affect prices here. Nos. 10 to 14 Iron Sheets, 2.80¢ @ 2.90¢; do., Steel, 3¢ @ 3.10¢; Tank Iron, 2.65¢ @ 2.75¢; Steel, 2.85¢ @ 2.95¢; Shell Steel, 3.25¢; Flange Steel, 3.50¢; Fire Box Steel, 4.50¢; Rivets, 4¢ @ 4.25¢; Norway Rivets, 40%, off; Tubes, one three-quarter and less, 40 % off; two to four and a half, 50 % off; larger, 52½ % off.

Sheet Iron.—Mills are well filled with orders, and agents are seldom able to make quotations. A few name 3¢ @ 3.10¢ at mill for No. 27 Common.

Galvanized Iron.—The market is in peculiar shape. The manufacturers are rushed with orders and are behind in shipments, so that agents are compelled to buy from jobbers to supply clamorous customers; yet prices continue low and are sometimes cut. Jobbers quote No. 27 Common Black at 3.30¢ @ 3.40¢, and Juniata Galvanized 65 % off.

Merchant Steel.—Makers of Plow Steel are booking large orders. One implement concern has placed a season contract for the Soft Steel required at a price understood to be above the rate fixed last year, and other similar consumers are dropping into line also. Tire Steel, 2.40¢ @ 2.50¢ rates; Open Hearth Spring and Machinery, 2.50¢ @ 2.75¢; Bessemer Machinery, 2.25¢ @ 2.30¢; Crucible Spring, 3.50¢; Tool Steel, 7¢ and upward; Crucible Sheets, 7¢, 8¢ and 10¢.

Old Iron Rails.—Old Iron Rails have sold up to $26.50. They are still very scarce, but, on the other hand, no large quantities are inquired for at the moment. Old Steel Rails have sold at $22 for Long Lengths, and $20 Short Pieces, but the latter was a special sale, the market being about $19. Car Wheels are quoted $19.50, with light transactions.

Scrap.—Business is quiet on the consumers' side. Dealers are busy taking in material, however, in anticipation of a good fall trade. We quote per net ton, dealers' selling prices: No. 1 Railroad, $21; Forge, $20; Mill, $16; Machinery Cast, $13; Borings, $9; Pipes and Flues, $14.50; Light Iron, $11; Stove Plate, $10.50; Wrought Turnings, $13; Axle Turnings, $13.50; Horse Shoes, $19.50; Car Axles, $25.50; Mixed Steel, $14.25; Coil Steel. $18; Leaf Steel, $19; Tire Steel, $20.

Pig Lead.—The market is dull and steady, with sales of some 300 tons, principally chemical. Offers are made for August delivery at 4.45¢ with 4.40¢ bid.

Steel Rails and Track Supplies.—The market is very active, and prices are firm with an upward tendency. Large orders for Rails are being entered, and the prospects are good for securing all the mills can do until late in the year. We quote Rails $34 @ $35.50, according to delivery. Iron Splice Bars, 2¢ @ 2.05¢; Steel ditto., 2.25¢; Spikes, $2.10 @ $2.15; Track Bolts, Hexagon Nuts, 3¢ @ 3.15¢.

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, July 21, 1890.

Pig Iron.—The market is very quiet, and the few orders that are received are generally for small lots for immediate shipment. It is a difficult matter to place an order for delivery extending over a long period, as furnaces are opposed to accepting these contracts, and prefer to keep the product in sight and not be swamped with an oversupply of orders on an advancing market. This course on their part is evidence that a higher range of values is anticipated as soon as the fall trade sets in. While the demand is unusually small, prices are firmly maintained, and it is only occasionally a concession of 25¢ ₱ ton is allowed. Consumers report an exceptionally large trade, and while this state of affairs lasts the future of the market is, to a certain extent, assured. There is a continued scarcity of Southern No. 1 Foundry, which is quoted at $16.25, f.o.b. St. Louis. The following prices are quoted for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	$16.00 @ $16.25
Southern Coke, No. 2 Foundry,	15.25 @ 15.50
Southern Coke, No. 3 Foundry,	14.75 @ 15.00
Gray Forge	14.25 @ 14.50
Southern Charcoal, No. 1 Foundry	18.00 @ 18.50
Southern Charcoal, No. 2 Foundry	17.00 @ 17.50
Missouri Charcoal, No. 1 Foundry	17.00 @ 17.50
Missouri Charcoal, No. 2 Foundry	16.25 @ 16.75
Ohio Softeners	18.00 @ 19.00

Bar Iron.—The demand is very heavy, and mills have their hands full in taking care of orders. Some of the mills are temporarily out of the market and refuse to quote on delivery earlier than September 1. Prices are firmly maintained, and 1.85¢ from mill appears to be bottom. Small lots from store command 2¢.

Barb Wire.—A slight improvement is noticed in the demand. Jobbers who usually defer making their purchases for the fall trade until August are in the market, and it is expected will shortly place their orders. This, with the current demand, enables the mills to enjoy a fair degree of activity. Prices are more firmly adhered to, as follows: Carload lots of Painted from 2.90¢ @ 2.95¢; Galvanized, 3.50¢ @ 3.55¢.

Louisville.

LOUISVILLE, KY., July 21, 1890.

Pig Iron.—The market during the past week has been a quiet one, and few transactions were recorded. It is thought that very little business will be done before August 1, when the starting up of mills which have been shut down on account of the heat, taking stock and making repairs, it is believed, will have a tendency to increase the movement of Iron, and the prospects for the fall trade look very satisfactory. Southern furnaces are not turning out as much Iron as usual, a good many of them continuing out of blast. We make no change in quotations from last week:

Southern Coke, No. 1 Foundry	$14.75 @ $15.25
Southern Coke, No. 2 Foundry	14.25 @ 14.75
Southern Coke, No. 3 Foundry	13.75 @ 14.25
Southern Coke, Gray Forge	13.25 @ 13.75
Southern Coke, Silver Gray	14.00 @ 15.00
Southern Coke, Car Wheel	22.50 @ 23.50
Southern Coke, Charcoal	17.50 @ 18.50

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, July 21, 1890.

Pig Iron.—There is no change to note in the condition of the market, as it appears to have gotten into a rut of sameness, where there is very little variation, excepting perhaps a rather unusual demand for No. 1, which appears to be scarce with the furnaces, in consequence of the long continued hot weather, which creates a lassitude among the operators, buyers, and sellers, which appears to have permeated every branch of the iron business. There is no further concession of prices, and so far as can be observed the demand and sales appear to be about equal to the production.

Cincinnati.

(*By Telegraph.*)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, July 22, 1890.

Pig Iron.—While the local market has been without special animation during the past week, there has been a fair volume of business for this season of the year, the bulk of the orders received have been for one and two carload lots, but several orders for 500 to 1000 tons have contributed toward a more satisfactory condition. Consumers placing orders for small amounts demand prompt delivery, but the larger amounts sold are upon condition of delivery for several months and up to the first of next year. In one instance at least sales have been made embracing several months of next year, while not a few purchasers buy for cash. The majority of transactions are made upon four months time. Any change in the statistical position of the market has been toward improvement. Stocks at Southern furnaces have actually decreased, while Northern furnaces report but a little over 8000 tons increase. There were two less furnaces in blast during June than in May. These remarks refer to Coke Irons alone. Stocks of Charcoal Iron throughout the country increased, but there was a decrease in the most active Southern and Northern districts. There were two additional Charcoal furnaces in blast. The feature of prominence, however, during the week has been the active trading in "Warrant" Iron, between 4000 and 5000 tons Southern brands, forge and foundry grades, mainly the latter, selling upon a somewhat lower basis, there being pressure to sell this Iron; but while "Warrant" Iron has been weak, prices upon Iron in the hands of furnaces have been well sustained. The attitude of Southern companies with respect to new business has been unchanged, but Ohio furnaces have secured a larger number of small orders, and there has been a fair movement of Lake Superior Iron, too. Taking the market as a whole, an easy tone has continued to prevail; but except on speculative lots prices have been without further decline. The labor troubles through which the railroads in this section have passed have left a legacy of blockaded and tangled freight, but the difficulties are being speedily and satisfactorily disposed of. The labor and fuel problems are causing some uneasiness in the South, but are being met by a determined spirit. Time alone can give full solution. The press of the country is teeming with accounts of new industries, actual and apparent, which depend upon iron, and while the capacity of the country can produce upward of 9,000,000 tons with present plants, the consumptive requirements are expanding and multiplying by the many new uses found for the metal. There is nothing discouraging, therefore, in the outlook, though there is little to stimulate buyers to activity. The present disposition to rest is entirely normal, and that concessions are granted is matter for small wonder, yet it is a wise buyer who provides for the future during just such periods. We quote:

Foundry.

Southern Coke, No. 1	$15.25 @ $15.75
Southern Coke, No. 2	14.75 @ 15.00
Southern Coke, No. 3	13.75 @ 14.00
Ohio Soft Stone Coal, No. 1	17.00 @ 17.50
Ohio Soft Stone Coal, No. 2	16.00 @ 16.50
Mahoning and Shenango Valley	17.50 @ 18.00
Hanging Rock Charcoal, No. 1	21.00 @ 22.00
Hanging Rock Charcoal, No. 2	19.50 @ 20.50

Tennessee and Alabama Charcoal, No. 1	18.00 @	19.00
Tennessee and Alabama Charcoal, No. 2	18.50 @	19.50
Forge.		
Gray Forge	13.25 @	13.50
Mottled Neutral Coke	12.75 @	13.00
Car Wheel and Malleable Irons.		
Southern Car Wheel	22.50 @	23.25
Hanging Rock, Cold Blast	22.00 @	22.50
Lake Superior Car Wheel and Malleable	21.00 @	22.00

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, July 22, 1890.

Pig Iron.—The cooler weather has caused an increased consumption, while the blowing out of a number of furnaces for relining and other repairs has cut down production considerably. It is stated that stocks in this district in first hands fell off greatly last month. Indeed, it is about as sure as anything can be that there will be a largely increased consumption, in view of the demand for finished products. Orders for some 40,000 tons of Skelp Iron have been placed here and in this vicinity recently, and it is evident that there will be a largely increased demand for raw Iron before long. During the week, however, business has been quiet. Some of the brokers reported that they had not been able to make a single sale, but they are hopeful of a considerably improved business within the next week or two, and the indications are that their expectations will be fully realized. Prices have undergone but little change recently, and the only sale of any consequence reported was a lot of 2000 tons Gray Forge for September, October and November delivery, on private terms, which is understood to have been at a pretty low price. We quote prices as follows:

Neutral Gray Forge	$15.25 @	$15.50, cash.
All Ore Mill	16.00@	16.50, "
White and Mottled	14.50 @	14.75, "
No. 1 Foundry	17.25 @	17.50, "
No. 2 Foundry	16.25 @	16.50, "
No. 2 Charcoal Foundry	21.50 @	22.50, "
Coal Blast Charcoal	26.00 @	36.00, "
Bessemer Iron	18.50 @	19.00, "

Most of the furnacemen are demanding $19 cash for Bessemer Iron, but it is probable that for nearby or immediate delivery it could be bought for $18.75, possibly $18.50.

Muck Bar.—While business the past week has been quiet, an increased demand in the near future is confidently looked for at mills making Skelp Iron; the large buyers are very busy, and will, no doubt, be on the market for considerable quantities of Muck before long. Prices remain as last quoted, $29 @ $29.50, cash, as to quality, delivery, &c.

Manganese.—There has been but little inquiry of late for Ferromanganese, but prices remain unchanged. We are advised of a sale of 80 % foreign at $75, Pittsburgh.

Manufactured Iron.—There is a very fair and increasing demand, not only for all kinds of merchant iron, but for leading specialties as well, and the outlook for an active fall and winter trade never was better. Mills generally are now pretty fully employed, although the greatest activity is in Skelp Iron; most of the mills making a specialty of this are very busy and sold ahead. Prices, however, remain about as last quoted: Bars, 1.80¢ @ 1.85¢; Plate and Tank, 2.15¢ @ 2.25¢; No. 24 Sheet, 2.85¢ @ 2.90; Skelp, 1.80¢ @ 1.85¢ for Grooved and 2.10¢ @ 2.15¢ for Sheared, all 60 days, 2 % off for cash.

Structural Iron.—Demand is increasing, and the mills here are reported as having about all they can do. There is scarcely a city or town in the country in which some large buildings are not going up, and the requirements for bridge building are large. No change in prices. Angles, 2.15¢ @ 2.20¢; Channels and Beams, 3.10¢; Tees, 2.75¢; Steel Sheared Bridge Plates, 2.65¢ @ 2.75¢; Universal Mill Plates, Iron, 2.50¢; Refined Bars, 1.90¢ @ 2¢.

Steel Plates.—This important industry continues in much the same condition noted in our last report. Business continues fairly active and prices steady. Fire Box, 4¼¢ @ 4¾¢; Shell, 3¢; Flange, 3.15¢ @ 3.20¢; Tank, 2.75¢.

Merchant Steel.—There is a good degree of activity, but prices remain unchanged. Tool Steel, as to quality and brand, 8¢ and upward; Crucible Spring Steel, 4¢; Open Hearth Steel, base sizes, 2¾¢; Crucible Machinery, 4¼¢; Bessemer Machinery, 2.35¢ @ 2.40¢; Tire Steel, 2.50¢ @ 2.60¢.

Billets and Slabs.—There does not appear to be so much inquiry for Billets, although the mills both here and at Wheeling are pretty well sold up, and mill owners are not particularly anxious about orders in consequence. While some few small sales have been made above $31, most of the business is being done at $30.50 @ $31. We are aware that sales have been reported for some weeks past at $32, and even $32.50, but they are not credited in well informed circles, and, it is conjectured, have been sent abroad for effect.

Wire Rods.—The situation remains substantially as noted in our report of a week ago; there is continued inquiry, but the difficulty is to find a mill that is in condition to take an order for delivery within the next two or three months. Some of them have had to shut down for repairs; others in consequence of labor troubles; and with an exceedingly high production and an active inquiry, it is not surprising that prices have advanced sharply of late. We continue to quote, in the absence of sales, at $45.50 to $46. For immediate or near by delivery higher prices than those quoted might be obtained, as some consumers are very low in stock.

Nails.—Steel Cut Nails are quoted at $1.85 @ $1.90, 60 days, 2 % off for cash in car lots, and about 10¢ ℔ keg additional in a small way. There is a fair inquiry, although some of the large jobbers bought pretty freely prior to the late advance, and are now in a position to hold off, as they usually do just after prices have been advanced, to see whether or not the advance is likely to be maintained. Iron Cut Nails are still being sold from 5¢ to 10¢ ℔ keg below Steel. Wire Nails are quoted at $2.35, 60 days, 2 % off for cash, with a fair business reported.

Wrought Iron Pipe.—The Pipe mills are all very busy and will be for some time to come, probably until the close of the year. An order for 400 miles of 6 to 8 inch Pipe, to go West, has been on the market the past week; part of it was placed here; some of it will go elsewhere. The indications are that the Pipe mills will have all they can get through with until the advent of cold weather, and here the pipe trade is a big factor in the Iron business. Prices remain unchanged. The regular monthly meeting of the Pipe Association takes place in Philadelphia to-morrow (Wednesday), but it is not likely that there will be any change in prices. Discounts on Black Butt Weld Pipe, 47½ %; on Galvanized ditto, 40 %; on Black Lap Welded, 60 %; on Galvanized ditto, 47½ %; Boiler Tubes—1¼-inch and smaller, 45 %; 2 to 4-inch, 50 %; 4-inch and larger, 52½ %; Casing, all sizes, 50 %.

Old Rails.—No recent sales reported, in the absence of which we continue to quote Iron at $26.50 @ $27, and Steel at $21 @ $21.50 for short and $22 @ $22.50 for long pieces. The demand for Iron Rails appears to have been satisfied here for the present, but the stock is light and there is no evidence of weakness. The Pennsylvania Railroad has none to sell.

Railway Track Supplies.—There is a very fair business and prices are steady at quoted rates: 2.10¢ @ 2.15¢ on cars here, 30 days; Splice Bars, 1.95¢ @ 2.05¢; Muck Bolts, 2.85¢ with Square and 3¢ with Hexagon Nuts.

Steel Rails.—While the mills here are well sold up for July to August and September, they are still soliciting orders for delivery beyond September. Late fall and winter delivery may be quoted at $31.50 @ $32; small orders for immediate or near-by delivery, $32.50 @ $33. So far as we can learn, there have been but few orders placed here within the past week or two.

Old Material.—There is considerable inquiry for No. 1 Wrought Scrap, which may be quoted at $21 @ $21.50, net ton; Old Iron Car Axles, $27.50 @ $28, net ton; Cast Scrap, $16 @ $16.25, gross; Old Car Wheels, $18 @ $18.50; Steel Bloom Ends, $21 @ $21.50. Considerable No. 1 Wrought has been sold within the past week or two at prices quoted.

Coke.—There is continued activity, with a better supply of cars than a week ago. Prices unchanged, as follows: Blast Furnace Coke, f.o.b. at ovens, $2.15; Foundry Coke, $2.45; Crushed Coke, $2.65 ℔ ton of 2000 lb. Prices at other points are as follows:

	Foundry Coke.	Crushed Coke.
On Cars at Boston and points taking Boston freight rates.	$6.45	$6.65
On cars at Baltimore	4.62	4.82
On cars at Buffalo	4.70	4.90
On cars at Cleveland	4.15	4.35
On cars at Cincinnati	5.10	5.30
On cars at Toledo	4.80	5.00
On cars at Detroit	4.80	5.00
On cars at East St. Louis	5.65	5.85
On cars at St. Louis	5.80	6.00
On cars at Chicago	5.20	5.40
On cars at Milwaukee	5.30	5.50

Freight rates from the regions are as follows:

To Pittsburgh	$0.70
To Mahoning and Shenango valleys	1.35
To Cleveland, Ohio	1.70
To Buffalo, N. Y.	2.25
To Detroit, Mich	2.35
To Cincinnati, Ohio	2.65
To Louisville, Ky	3.20
To Chicago, Ill	2.75
To Milwaukee, Wis	2.85
To St. Louis, Mo	3.35
To East St. Louis	3.20
To Baltimore	2.17
To Boston	4.00

(*By Telegraph.*)

There is an increasing inquiry reported for nearly all kinds of raw material, which it is expected will lead to increased business soon. The demand for finished material is also improving. No change whatever in prices.

Detroit.

WILLIAM F. JARVIS & Co., under date of July 21, 1890, say: While there have been one or two deals of some magnitude for Southern Iron, and also some inquiries for Lake Superior Charcoal, the general market has been comparatively dull. The break up of the long strike among the carpenters in this city will, we think, promote general building operations and cause the buying of considerable material in this line in the very near future. Added to this the cessation of buying, which has continued so long, will soon bring some of the smaller users into the market, and we think that more business will be reported from now on than has been done for the past three or four weeks. The firmest feature of the market is Lake Superior Charcoal, while Southern and Bessemer seem to have arrived at about

rock bottom and remain there, with very few fluctuations. We quote the market as follows:

Lake Superior Charcoal, all numbers	$20.50 @ $21.00
Lake Superior Coke, Bessemer	20.00 @ 21.00
Katahdin (Maine Charcoal)	24.00 @ 25.00
Lake Superior Coke Foundry, all ore	19.25 @ 20.75
Southern No. 1	17.00 @ 17.50
Southern Gray Forge	15.25 @ 15.50
Jackson County (Ohio) Silvery	19.00 @ 19.50

Cleveland.

CLEVELAND, July 21, 1890.

Iron Ore.—The market remains quiet, with no change in quotations and with no sales of any consequence occurring. The transportation rate from Ashland and Two Harbors is now $1.15, instead of $1.20, as heretofore, and Ore is still coming down from all Lake Superior ports in enormous quantities. Receipts at Lake Erie harbors to date are close upon 3,250,000 tons, as compared with 2,700,000 tons at a corresponding period last year. The crush upon the local docks has been, in some degree, relieved by the united efforts of the railroad companies.

Pig Iron.—The market is entirely devoid of interesting or important features. Many of the mills, idle since the first of the month, will resume operations within a few days, and a very fair demand is expected very soon thereafter. In the absence of actual transactions quotations are of little consequence, and indeed vary so much in the estimation of brokers and furnacemen as to render any figures practically valueless. There seems to exist no disposition to shade prices in the hope of creating a market, and the very few sales that have occurred have been at prices very close to those prevailing during the past month or six weeks. Lake Superior Charcoal Irons sold so freely in June and early in July that there now seems to be but a small demand. Forge Irons are favorites.

Scrap.—Prices are not very strong and little business is being done. No. 1 Railroad Wrought is quoted at $21 @ $21.50; Car Axles, $26; Wrought Turnings, $15 @ $15.50; Cast Scrap, $13; Machinery Scrap, $14.50 @ $15.

Old Rails.—The market is unusually quiet. About $26.50 is being asked for Old Americans, and about that figure would probably prevail were sales to occur. The demand for Old Wheels is also slight.

Manufactured Iron. — Bar Iron is quoted nominally at 1.70¢ @ 1.75¢ from the mills, but very little business is being done.

(*By Telegraph.*)

The extensive Iron plant of Brown, Bonnell & Co., at Youngstown, appraised at $962,737, was sold yesterday. The property could not be disposed of for less than two-thirds of the appraisement, and the first bid received was for $700,000. Two other bids being made, it was sold to the following purchasers: William McCreary, of Pittsburgh; Judge C. C. Baldwin, of Cleveland; Henry Tod & Co. and nine trustees, representing creditors having claims amounting to $1,293,412. The amount of the indebtedness is $1,320,671 The mills, which employ 3000 men, will continue in operation. It is rumored that the purchase will result in the organization of a new corporation that will enlarge the plant. The local market presents no new features, only a very small amount of business being transacted.

Financial.

Secretary Windom's latest bond card withdraws the circular under which the Treasury has made daily purchases of bonds at fixed prices, and instead invites proposals for selling to the Government any quantity of United States bonds at any price that may suit holders, such tenders to be opened on Thursday noon. The most important feature of the announcement is a statement that the Treasury now holds a surplus of $50,000,000, in addition to $23,000,000 fractional silver and $53,000,000 transferred from the fund for the redemption of national bank notes, all of which—aggregating $126,000,000—is now earning nothing for the Government. He does not say that he intends to invest $126,000,000 in bonds, but does say "the department is, therefore, in a position to retire a considerable amount of the interest bearing obligations of the Government." This apparent change of policy is construed as indicating a desire to reduce the Treasury accumulation caused by unusually large customs and revenue receipts. It is also suggested that, anticipating need of large disbursements before long, Secretary Windom has not entire confidence that all the silver bullion in sight will be offered at reasonable prices.

The view frequently entertained in Wall street respecting the silver outlook is reflected by a prominent broker, who expresses satisfaction that silver exports have been resumed. When the price of the metal began to rise here it not only stopped our customary exports, but arbitrage dealings brought hither several large lots, and cries were raised that London would flood us with cheap silver. But England is an absorber of our silver as she is of our grain, and a few weeks have sufficed to clean up such loose surplus of the metal as could be obtained at prices lower than ours. The normal movement outward, therefore, has been resumed. President St. Johns, of the Mercantile National Bank, who was among the first to be suspected of holding radical views on the silver question, says, with reference to the acceptance by the banks of the notes to be issued in the purchase of silver as a part of the lawful money reserve held as a security for deposits: "The notes being 'legal tender' notes and redeemable at the Government option in gold or silver coin are in every respect the full equivalent of our present 'greenback,' with one additional good feature, viz: that 100 per cent. silver reserve must be maintained against them. The one required additional enactment for adoption by a subsequent Congress is a provision of law making it the duty of the President to proclaim our mints open to the free coinage of a 400-grain standard silver dollar, *i. e.*, within 0.03 per cent. of the Latin Union coinage ratio, immediately upon the announced reopening of the Latin mints free to their silver." In reference to the situation abroad the London *Bullionist* says that in the absence of purchasing orders from the United States, the silver market has been regulated by the Indian exchanges, and about 350,000 pounds has been shipped to Bombay in the fortnight. On July 22 bar silver in London was quoted 50½d. per ounce, an unprecedented price, but is now 50⅛d.

United States bonds are quoted as follows:

U. S. 4½s, 1891, registered	108
U. S. 4½s, 1891, coupon	108
U. S. 4s, 1907, registered	121¼
U. S. 4s, 1907, coupon	121⅝
U. S. currency 6s, 1895	112½

The stock market continued extremely dull, the signing of the Silver bill having no apparent influence. More tempting opportunities elsewhere for speculation were spoken of as the principal cause. On Monday there was some movement in Lackawanna and Sugar Trust, also a good support for silver bullion certificates on limited transactions.

The monthly statement of the associated banks was much better than anticipated, a loss of only $580,675 in surplus reserve being reported, while experts had figured for a decrease of from three to four millions. The items show a contraction in loans of $645,000, a decrease in deposits of $1,166,900, and a loss in cash of $997,400. The banks now hold $5,702,400 above the 25 per cent. required by law. Money tended to easier rates for time loans. Commercial paper was in light demand, with a full supply of first-class names. The rates realized were 5 % for 60 days, four months, and 5½ @ 6 % for longer periods. These rates apply only to loans made on choice collateral. In the West there is a disposition to "down brakes."

Rates for sterling became firmer at the close under the influence of a demand to remit for stocks sold for European account, and the Canadian banks advanced rates to $4.85½ for long and $4.89½ for short. Gold to the amount of $1,700,000 went forward.

James M. Brown, head of the banking firm of Brown Bros., who died at Manchester, Vt., on Saturday, was for two years president of the New York Chamber of Commerce and prominent in various institutions.

Aside from the renewed interest in the wheat market, caused by hot weather in the West and increased demands from Europe, there are few new developments in commercial circles. Exports of wheat for three weeks in July equal 5,000,000 bushels, which is in excess of exports for the corresponding period in the last two years, while the price is 10¢ ₱ bushel higher than a year ago. The Cincinnati *Price Current*, in its revised estimate of the Wheat crop, makes it 420,000,000 bushels. Cotton is more active and $\frac{3}{16}$¢ higher on the advance abroad and uneasiness respecting the growing crop in Georgia and Texas. Raw Sugar stands in price at 4 13/16¢ for fair refining and 5 1/16¢ for 96 test centrifugal, against 7½¢ and 8½¢ respectively this period last year. Coffee is stronger.

In dry goods, the situation, aside from the tariff question, is satisfactory, especially in view of the fact that the last week of July has always been the starting point of a fairly active fall trade. Anticipations of a good season are quite general, but large importations of certain lines hang over the future as an uncertain factor. Respecting the crop outlook, the Cincinnati *Price Current* says: There has been serious lack of moisture recently in a large part of the West, which is now threatening a material impairment of the corn crop. The winter wheat crop cannot reasonably be estimated above 250,000,000 bushels on present indications. The spring wheat crop in the Northwest has been maintaining its promise quite well, as a rule, and the general situation justifies expectation of approximately 170,000,000 bushels of spring grain. It appears to be in order to slightly reduce calculations as to the aggregate wheat production this season, and 420,000,000 bushels may now be accepted as a full estimate. No elevator in North Dakota will store grain this year, as has been the custom heretofore, and hence 4,000,000 bushels of grain will have to be rushed on the market. This action is taken because of the new law making elevators pay a license of $2.50 for each 100 bushels stored. A dispatch from the City of Mexico says that the Government's railway subsidy loan of $6,000,000 has finally been given to the Berlin house of Baron Bleichroder, who takes it at 88¾. The London *Economist* finds that the Argentine Republic has borrowed in London during the past two

years £30,000,000 on railroad projects, tramways, water works, &c. The amount of money which has been raised on cedulas is not known.

New York.

Office of *The Iron Age*, 66 and 68 Duane street, NEW YORK, July 23, 1890.

American Pig.—Considering the enormous production of the past six months, which we estimate at at least 4,600,000 gross tons, the report of stocks just issued by the American Iron and Steel Association is certainly very gratifying. It shows that since January 1 there has been an increase of only 92,271 gross tons in makers' hands, and 30,700 tons in warrant stores, making the total now 403--450 gross tons. This is less than a three weeks' supply of all kinds, and leaving out of consideration Charcoal Pig, less than a two weeks' supply. This shows how enormously the consumption of this country has been expanded in the last six months. It will generally inspire the trade with confidence. The New York market has been very quiet during the past week. One feature worthy of consideration is the fact that consumers are purchasing Warrant Irons, taking specified brands. We are assured by very good authority that a number of transactions of this character have been made lately, resulting in a material saving to the buyer, as contrasted with purchases made in the open market There has been some weakness lately in Southern Charcoal Iron, there being an excess of certain numbers. Thus, No. 2 may be purchased at $17.50 @ $18 at furnace. We quote No. 1 Northern Iron, $17.25 @ $18.50; No. 2, $16 @ $17, and Southern Iron, No. 1, $17 @ $17.50; No. 1, Soft, $16.50 @ $16.75, and No. 2, $16 @ $16.25. Bessemer Pig is offered at $19 @ $19.25, delivered at tidewater.

Spiegeleisen and Ferromanganese.—The market is extremely dull and remains nominally $30 @ $30.50 for 20 %, and $71.50 @ $72 50 for Ferro.

Wire Rods.—The scarcity in Wire Rods continues and threatens to become serious for the early future. There have been some sales of special brands, for re-export purposes on the basis of about $48, ex-ship, New York. Foreign Rods, buyers taking risk of duty, for prompt shipment are offered at $46 @ $46.50, with a few sales to cover immediate requirements.

Steel Rails.—Only sales of small lots are reported by Eastern mills, so that the aggregate business done during the week has been light. The report that the order for 7500 tons, Savannah delivery, had been placed is inaccurate, the negotiations not having been closed as yet. It is reported that the Illinois Central order for 5000 tons has been taken by the Chicago mills. The market is steady at $31 @ $32, the number of sellers at the former figure being small. But little fall work has came out so far. There has been a very limited number of winter inquiries, but the mills do not care to quote on them, except where they are a part of contracts running through the fall and winter. The situation is regarded as healthy, and a feeling of confidence in the future prevails among sellers.

Old Rails.—A number of round lots of Foreign Rails have been sold for shipment at private terms. The only large sale of Domestic in this market has been a lot of nearly 2000 tons of specially desirable Rails, delivery in the interior of the State, at $25. Special conditions prevailed. The market, which had a drooping tendency early in the week, is said to be recovering; $24 was bid for 1000-ton lot, but was declined. We quote $24 @ $24.50.

Track Fastenings.—We quote Spikes, 2¢ @ 2.05¢; Fish Plates, 1.75¢ @ 1.9¢, and Bolts and Nuts, 2.80¢ @ 3¢, delivered.

Warren, Wood & Co., of 115 Broadway, this city, have been appointed sales agents for the American Scotch Iron Company, of Syracuse, N. Y. This company, under the management of F. B. Baird, have taken over the Onondaga furnaces, one of which, after remodeling, is to blow in on Saturday. The company will make a specialty of American Scotch and High Silicon Irons. Their American Scotch will be known under the brand name of "Trimo Scotch," and the Silicon Iron as "Mohawk High Silicon." They have also been appointed selling agents of the Roanoke Iron Company, at Roanoke, Va., who are building a furnace which it is expected will be ready to go into blast on about August 1. The manager of the furnace is Henry King, for a long time the manager of the old Graffton furnaces at Leetonia, Ohio. Warren, Wood & Co. have also been appointed selling agents for the Eastern States of the Georgia Mining, Mfg. and Investment Company, Franklin Weld, general manager, operating the furnace of the Walker Coal and Iron Company, at Rising Fawn, Tenn., and the Chattanooga Iron Company, at Chattanooga, Tenn.

Pig Iron Warrants.

The following sales of Pig Iron Warrants are reported on the floor of the Consolidated Stock and Petroleum Exchange:

FRIDAY, July 18.

500 tons, August..... $15.¾

SATURDAY, July 19.

700 tons, August..... 15.¾
100 tons, September..... 15.⅞

MONDAY, July 21.

400 tons, August 15.⅝
300 tons, September..... 15.¾

TUESDAY, July 22.

500 tons, August..... 15.⅛
200 tons, September 15.⅜

Warrant Stocks.—From July 10 to 20, 1100 tons of Iron were received at the yards of the Pig Iron Storage Warrant Company and 1500 tons were taken out, leaving the net stock in yards July 21, 65,400 tons, against 35,100 tons on January 1.

Metal Market.

Copper.—The position of the market continues strong and prices are still slowly, but steadily, moving upward. Purchases of 400,000 to 500,000 lb early in the week under review cleaned up all the Lake Superior that could be obtained at 17¢. That price has since been offered and refused for various quantities up to 1,000,000 lb. Some few orders for moderate sized lots are reported to have been placed at 17¼¢ for future delivery. Probably a limited amount may be secured at 17⅛¢ for early delivery, but the general price is now 17¼¢, and the Calumet and Hecla Company have jumped their figures to 18¢ Arizona Ingot has been selling in a moderate way at 15½¢, but is now held at 16¢. Casting brands are quoted up to 15¢, but, as yet, 14¾¢ seems to be the highest price at which business has been effected. It is reported that the Anaconda Smelting Works have been shut down, owing to railroad labor difficulties that deprived the company of transportation facilities.

Pig Tin.—Straits Tin for early delivery has declined about ⅛¢ ₱ lb and for future about ¼¢, under the weight of quite heavy supply here and lack of speculative demand, together with a sharp reaction in the London market. The demand from all sources has been slow. Jobbers seem to have sufficient supply to meet current requirements, and the purchases for consumption are barely of average volume for the season. At the moment there is general reluctance to invest in the Metal in a speculative way. The effect of the Silver legislation seems to have been fully discounted and new incentive comes to the fore. With consumers the tendency is to purchase only as immediate wants may necessitate. Latest transactions reported outside of the Exchange were at 21.10¢ for 5-ton lots and 21.20¢ @ 21.35¢ for smaller quantities from store. Net cash prices for 10-ton lots were 20.90¢ bid, 21.10¢ asked, spot; 20.90¢ @ 21.10¢, July; 20.90¢ @ 21¢, August, and 21¢ @ 21.05¢ September delivery.

Pig Lead.—The market has been extremely quiet and wholly devoid of new or interesting feature. Purchases by consumers are running surprisingly small, the interest manifested is very tame as well and offerings are apparently reserved, yet such as would indicate that holders are more willing to consider offers of 4⅛¢. In point of fact the market looks rather weak at the price quoted. One sale at 4.45¢ has been made.

Spelter.—The situation is practically the same as it was a week ago. Business has been light during the interval and the demand moderate, with little or no call for more than a single carload at a time. Prices are barely steady at 5.45¢ @ 5.50¢ for prime Western.

Antimony.—Prices are without important change and the demand is rather slow. About 21½¢ quoted for Hallett's, 24½¢ for Cookson's and 22¢ for LX brand.

Tin Plate.—Reports from the foreign market indicate a very firm feeling there, with the tendency of prices upward, but local interest is tame. Large buyers put in only occasional good sized orders, and from other sources there is merely the routine demand for moderate quantities. Supplies are favorably situated, however, and prices remain firm. Quotations for large lines, on the spot, are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $4.45; J. B. grade, do., $4.55; Siemens Steel, $4.75; Bessemer do., $4.50. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $4.70; IX basis, $5.70; Siemens Steel, IC basis, $4.80, IX basis, $5.80. IC Charcoals—Calland grade, ½ X, $5.50; Melyn grade, $5.70; for each additional X add $1.50; Allaway grade, $4.85 @ $4.90; Grange grade, $5.00 @ $5.10; for each additional X add $1. Charcoal Ternes—Worcester, 14 x 20, $4.80; 20 x 28, $9.50; M. F., 14 x 20, $7.10; do., 20 x 28, $13.75; Dean, 14 x 20, $4.50; do., 20 x 28, $8.90 @ $9; D. R. D. grade, 14 x 20, $4.45; do., 20 x 28, $8.85 @ $8.90; Mansel, 14 x 20, $4.50; do., 20 x 28, $9; Alyn, 14 x 20, $4.50; do., 20 x 28, $9: Dyffryn, 14 x 20, $4.60; do., 20 x 28, $9.10; Wasters—S. T. P. grade, 14 x 20, $4.20; do., 20 x 28, $8.60; Abercarne grade, 14 x 20, $4.20; do., 20 x 28, $8.55.

New York Metal Exchange.

The following sales are reported:

THURSDAY, July 17.

20 tons Tin, September..... 21.10¢

FRIDAY, July 18.

10 tons Tin, spot..... 21.20¢
100 tons Iron, spot..... $15.50

MONDAY, July 21.

25 tons Tin, August..... 21.00¢

TUESDAY, July 22.

10 tons Tin, spot..... 21.05¢
20 tons Tin, August..... 21.00¢

WEDNESDAY, July 23.

10 tons Tin, August..... 20.95¢

Pig Iron Stocks.—The American Iron and Steel Association report that the quantity of all kinds of pig iron held for sale by the manufacturers or their agents

on June 30 amounted to 380,744 net tons, or 339,950 gross tons, which is an increase since January 1 of 92,271 gross tons. Compared with the unsold stocks held a year ago, however, the quantity reported on June 30 has decreased 162,934 gross tons. In addition to the quantity of pig iron held by the makers or their agents on June 3, the American Pig Iron Storage Warrant Company report 63,500 gross tons stored in their warrant yards on that date, which makes a total of 403,450 tons of unsold pig iron, which is less than a three weeks' supply at the present rate of consumption in this country.

Imports.

Hardware, Machinery, &c.

Barbour Bros. & Co., Mach'y, cs., 3
Boker, Hermann & Co., Mdse., cs., 10; Arms, cs., 43
Emile, James, Mach'y, cs., 135
Erie Despatch, Mach'y, cs., 1
Field, Alfred & Co., Cutlery, cs., 17; Mdse., cs., 11
Foley, Edward, Mach'y, cs., 11
Folsom Arms Co., Arms, cs., 6
Graef Cutlery Company, Cutlery, cs., 7
Hartley & Graham, Mdse., cs., 29
Havemeyer & Elder, Filter Presses, cs., 75
Lau, J. H., & Co., Arms, cs., 7
Merchants' Despatch Company, Arms, cs., 23
Ollesheimer & Bros., Ironware, cs., 6
Schoverling, Daly & Gales, Mdse., cs., 26
Sellers, W. B., Mdse., cs., 2
Ward, Jas. E. & Co., Sewing Machines, 370
Werlemann, Mdse., cs., 18
Wiebusch & Hilger, Mdse., cs., 9
Order—Mach'y, bbls., 10; Nails, cks., 27

Coal Market.

The Anthracite Coal market is phenomenally dull, with little doing beyond filling orders of a former date. In the face of a large production, amounting to 753,913 tons for the week ending 12th inst., and a total since January 1 almost precisely corresponding with shipments for the same time last year, there is no anxiety with reference to future supplies. Prices continue weak on the basis of spring circulars. The latest advance is admitted to have been merely on paper. It is reasoned, therefore, that no actual advance can be expected in the early future. Nothing was done at the meeting of sales agents last week beyond a tacit agreement that the output for July shall not exceed 3,000,000 tons, or 250,000 tons less than had been previously arranged. The latest official statement is as follows:

Regions.	July 12, 1890. Tons.	July 13, 1889. Tons.	Difference. Tons.
Wyoming.....	401,201	459,775	Dec. 58,574
Lehigh.....	124,820	129,604	Dec. 4,784
Schuylkill.....	227,892	226,016	Inc. 1,876
Total.....	753,913	815,395	Dec. 61,482
Total for year.	16,580,061	16,590,577	Dec. 10,516

The Anthracite Coal shipments for June were 3,445,562 tons, or 412,346 tons more than in June, 1889, and nearly 700,000 tons more than the allotment. The apparent consumption of Coal was very heavy, but it was not enough to take the large supply, and stocks increased 25,862 tons.

The Bituminous trade is in rather better shape, but quiet. Freights low.

Cumberland shipments for the week ending 12th inst. were 76,600 tons.

The Reading Coal managers give no indication of an intended shutting down, Manager Henderson, at Pottsville, says, that while less than 50 colleries are now in operation, the work of repair is being quietly pushed at the others with a view to resumption at the earliest possible moment. Not all of those now at work are on full time, but they will be put on when conditions warrant such a course. The other producers, it is said, are equally anxious to get to work in earnest.

An important Coal bonanza is reported to have been struck in Dickson borough, Scranton.

A fire in one of A. Pardee & Co.'s mines, at Hazleton, is doing much mischief.

The water board, at Troy, N. Y., has awarded contracts for coal for the pumping station as follows: Meeker & Spotten, 800 tons Clearfield Bituminous at $3.25 per ton; Crandall, Knight & Reichard, 800 tons of Anthracite mine screenings at $2.11 per ton.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, July 23, 1890.

Pig Iron warrants have averaged somewhat higher most of the week, and the market has shown greater firmness, deriving a good measure of support from free purchases by outsiders, prompted by the pressure of a quite large shipping demand. Scotch moved up to 46/1 and Cleveland to 43/3 at the close on Tuesday, while Hematites have risen to 53/7½. On Wednesday's market Scotch eased off 6d @ 7d, Cleveland about 4½d and Hematites 1/6 on realizations. Makers' prices have varied in a moderate way only, but, upon the whole, seem rather steadier.

Copper has ruled somewhat irregular in price, receding to £57, spot, for Merchant Bars, and upon purchases of large blocks at that figure subsequently moved up to £57. 15/. Speculative holders, fearing a further decline, have realized freely, but the position continues strong. Among recent transactions in furnace material a sale of 100 tons Anaconda Matte at 11/6 is noted.

A large business was done in Straits Tin at about £94. 10/, and for a time there was some difficulty in selling cash lots. This brought about an improvement in the feeling, but the demand was well satisfied, and operations have since been light and at lower prices, although it is believed that the increased value of Silver will likely hinder shipments from the East and cause the market to harden.

Tin Plate has ruled very firm, with 14/3 now the inside price for Bessemers. Makers offer with reserve. A good business is reported, chiefly for the Continent and Canada. Negotiations for several large lines for America have been broken off, owing to the delay with the Tariff bill. The Hope Tin Plate Company have liquidated.

Advices from Germany state that the demand there for Steel Wire Rods is improving, and that prices are firmer. English market quotations are also about 2/6 up, and makers are quoting 5/ higher for Rails. Otherwise no change is visible in the market for Steel goods.

Scotch Pig Iron.—A very good business in makers' Iron and prices firm for the best brands, but somewhat irregular on others.

No. 1 Coltness,	f.o.b. Glasgow	.....	61/6
No. 1 Summerlee,	"	"	61/6
No. 1 Gartsherrie,	"	"	60/
No. 1 Langloan.	"	"	61/6
No. 1 Carnbroe,	"	"	47/6
No. 1 Shotts,	"	at Leith...	63/
No. 1 Glengarnock,	"	Ardrossan.	59/
No. 1 Dalmellington,	"	"	52/
No. 1 Eglinton,	"	"	47/6

Steamer freights, Glasgow to New York, 2/6, nominal: Liverpool to New York, 10/.

Cleveland Pig.—Sales have been moderate and the demand at present is rather slow. Makers quote 43/ for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—There is little or no increase of business, but prices are steady. West Coast brands, Nos. 1, 2 and 3, 52/, f.o.b. shipping port.

Spiegeleisen.—The demand keeps up very fair, and prices show little change. English 20 % is quoted at 92/6, f.o.b. shipping port.

Steel Rails.—Very fair orders are on the market, and prices are firmer. Heavy sections quoted at £4. 5/, and light sections £6 @ £6. 5/, f.o.b. at N. W. England shipping point.

Steel Blooms.—There is more demand, but no change in prices. Makers quote at £4. 15/ for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Some improvement in the demand, but no change in prices. Bessemer 2½ x 2½ inches, £4. 17/6, f.o.b. at N. W. England shipping point.

Steel Slabs.—A quiet market for these, and prices without change. Bessemer quoted at £5. 5/, f.o.b. at N. W. England shipping point.

Old Iron Rails.—The demand has fallen off and prices remain as before. Tees quoted at £3. 2/6 @ £3. 5/, and Double Heads £3. 5/ @ £3. 7/6, f.o.b.

Scrap Iron.—Prices are without change and the demand is quiet. Heavy Wrought quoted at £2. 15/ @ £2. 17/6, f.o.b.

Crop Ends.—No change whatever, the demand being moderate. Bessemer quoted at £2. 17/6 @ £3, f.o.b.

Tin Plate.—The market retains a very firm tone and the demand keeps up well. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade.....	16/ @ 16/3
IC Bessemer Steel, Coke finish.... ..	14/3 @ 14/6
IC Siemens " " "	14/6 @ 14/9
IC Coke, B. V. grade.....	14/ @ 14/3
Charcoal Terne, Dean grade....	14/ @ ...

Manufactured Iron.—A fairly active business noted, but prices are still somewhat irregular. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Marked Bars	.....			@	9	0	0
" Common "	.....			@	7	0	0
Staff. Bl'k Sheet, singles...	.....			@	7	10	0
Welsh Bars (f.o.b. Wales)...	6	2	6	@	6	5	0

Tin.—The demand moderate to-day and prices barely steady. Straits quoted at £94. 7/6, spot, and £95 for three months futures.

Copper.—There is still a brisk demand and prices are firm. Merchant Bars are quoted at £58, spot, and £58. 12/6 three months futures. Best selected, £64.

Lead.—Dealings have been moderate and at rather lower prices. Quoted at £12. 15/ for Soft Spanish.

Spelter.—Prices firmer and the demand fair. Quoted at £23. 5/ for ordinary Silesian.

Capt. Archibald Watt, of this port, the designer of the novel yacht Hum, is preparing to launch his new boat. She is equipped with a generator and a quadruple expansion engine, the first, it is claimed, that has ever been built in this country. Captain Watt's engine weighs less than 300 pounds, though he says that it develops 10 horse power. It stands 20 inches high by 13 inches wide at the bed plate, and it drives twin screws different from any before used.

HARDWARE.

The Condition of Trade.

With something of midsummer dullness there is still a fair activity in trade and the continuance of a hopeful feeling. The fact that prices are, with scarcely an exception, steadily maintained is under these circumstances evidence of the excellent tone of the market. The hopefulness expressed by the trade generally and the continuance of an exceptionally good business in most of the important Hardware centers are facts, also, which justify the expectation of a fine fall trade.

The following dispatch from Chicago represents the admirable tone of that market:

Chicago.

(By Telegraph.)

Hardware jobbers report a rushing trade in every direction. Heavy Hardware jobbers are selling large quantities of Iron and Steel and of all kinds of manufactured goods in their line. They continue to report a better trade than for many years at this season. The Shelf Hardware jobbers are selling a very large proportion of Shelf Goods, which is exceedingly satisfactory to them, as showing a good condition of prosperity throughout the country. No changes in price are reported, except that an occasional unexpected weakness develops in some line, even where great activity prevails. The condition of business is so good, however, that these occurrences are only regarded as incidents and seem to cut no special figure. Collections are very good, notwithstanding the tightness of money in city financial circles. The abundance of money throughout the country is, in fact, regarded as the chief cause of financial stringency at the money counters.

Nails show no sign of weakness. The local demand for Cut Steel Nails is somewhat light at present, but heavy inquiries are being received from outside localities and good orders are being booked for August and September delivery, but not beyond that. The Wheeling mills ask $1.85 and $1.90 at mill for 25¢ average. Wire Nails are especially firm, in consequence of the increased scarcity and advancing prices of Wire Rods as well as stoppages of Nail factories from various causes cutting down their production. Quotations by the manufacturers vary considerably under these circumstances. Some name $2.45, Chicago, while other ask $2.40 at Eastern mills, and claim that all makers will soon advance to that rate if Rods continue to be so scarce. Jobbers quote $2 @ $2.05 for Cut Steel Nails and $2.50 for Wire Nails.

Barb Wire is still selling well, but manufacturers are now catching up with their orders and making prompt deliveries. None of them are soliciting orders so far as can be ascertained, so that evidently there is as yet no accumulation of stock. Jobbers quote small lots of Painted at $2.90, and Galvanized at $3.50, and make no distinction as to quantity.

Wire Nails.

The market on Wire Nails is practically unchanged since our last report. It is characterized by a steady and firm tone, and there are indications of a disposition on the part of some of the manufacturers to name prices slightly in advance of those which have recently been ruling. Quotations are on a basis of from $2.30 to $2.35, in carload lots at mill.

Miscellaneous Prices.

The manufacturers of Loaded Paper Shot Shells have, under date of July 19, adopted a new and slightly advanced list. In this revised list the prices for various loads are based on the quantities of materials used. This revised list is announced by the Union Metallic Cartridge Company, Bridgeport, Conn., as follows, subject to a discount of 40 and 10 and 5 per cent., 60 days, or 2 per cent. discount for cash in 10 days:

Club Loaded Shells.

	List.
12 Gauge, 3 drams, 1 ounce, Black Edge and Cardboard Wads	$25.00
10 Gauge, 3¾ drams, 1 ounce, Black Edge and Cardboard Wads	27.50
14, 16 and 20 Gauge, 2¾ drams, ⅞ ounce, Black Edge and Cardboard Wads	25.00
For each ¼ dram of powder, add or deduct	0.50
For each ⅛ ounce of shot, add or deduct	1.00
" chilled or buck shot, add	1.00
" pink edge wads 12 to 20 G., add	1.10
" " " " 10 G., add	1.60
" Amn. wood powder, 12 to 20 G., add	10.00
" " " " 10 G., add	12.50
" Schultz powder, 12 to 20 G., add	15.00
" " " 10 G., add	20.00

The Winchester Repeating Arms Company, New Haven, Conn., announce the revised prices of their Star and Rival brands as follows:

12 *Gauge.*			10 *Gauge.*		
Drams powder.	Ounces shot.	Price per 1000.	Drams powder.	Ounces shot.	Price per 1000.
3	1 ..	$25.00	3¾....	1 ..	$27.50
3¼....	1 ..	25.50	4	1⅛..	29.00
4¼....	1⅛..	26.50	4¼....	1⅛..	29.50
3½....	1⅛..	27.00	4½....	1⅛..	30.00
3¾....	1⅛..	27.50	4¾....	1⅛..	30.50
4	1⅛..	28.00	3½....	1¼..	29.00
3	1¼..	27.00	3¾....	1¼..	29.50
3¼....	1¼..	27.50	4	1¼..	30.00
3½....	1¼..	28.00	4¼....	1¼..	30.50
			4½....	1¼..	31.00
			5	1¼..	32.00

The above prices are for loads with any size of Soft Drop Shot. Chilled or Buck Shot list at $1 per 1000 extra. Pink Edge Wads, $1.10 per 1000 extra for 12 gauge, $1.60 for 10 gauge.

The manufacturers of Planes met last week in this city and continued existing prices, except as to fancy planes, in which an advance was made, the new discount being 40 per cent., instead of 45 per cent., as heretofore.

Notwithstanding the destruction of a large quantity of Binder Twine at the recent fire in Minneapolis, to which reference was made in our last issue, it is probable that the price will remain unaffected, and not be advanced, as intimated by some. It is now stated that fully 1000 tons of the Twine were consumed, but this is so small a proportion to the entire amount regularly absorbed that the market will probably be unaffected.

A number of the leading Flax Twine manufacturers of the country met some of the representative wholesale dealers last week for the purpose of reaching an understanding in regard to prices, so that a fair profit might be secured and cutting prevented. The manufacturers proposed an agreement by which a remunerative scale of prices should be maintained. The matter was left in the hands of committees to recommend definite action, it being the expectation that a scale of prices graded according to quantity will be adopted by the manufacturers and to which the jobbers will be expected to adhere.

The following is the price list of Dean's Patent Combination Locks, manufactured by the Canton Combination Lock Company, Canton, Ohio, descriptions of whose goods we have given in recent issues. The list of Door Locks is subject to a discount of 40 per cent., and the list of the Drawer Locks and Padlocks to a discount of 30 per cent.

Mortise Door Locks.

No. 50. Nickel Plated Face, Front, Rose and Strike, Lock made of brass throughout, each	$6.00
No. 100. Real Bronze Face, Front, Rose and Strike, working parts of brass, each	5.50
No. 150. Ornamental Bronze Finish, Face, Front, Rose and Strike of iron, Buttons, Bolt, &c., of brass, each	5.00

Knobs for different style Locks at from 50 cents to $1.50 per pair, net.

Drawer, Desk, Locker and Cupboard Locks.

No. 200. Nickel Plated Face, Plate and Strike, Lock made of brass throughout, per dozen	$30.00
No. 250. Real Bronze or Brass Face, Plate and Strike, working parts of brass, per dozen	24.00
No. 300. Ornamental Bronze Finish, Face Plate and Strike of iron. Buttons, Bolt and other parts of brass, per dozen	18.00

Padlocks.

No. 350. Real Bronze or Brass, working parts of brass throughout, no possibility of rust, per dozen	$24.00
No. 400. Japanned Iron Case, working parts of brass, per dozen	18.00

Syracuse Fiber Ware Company, Syracuse, N. Y., issue a folder illustrating their goods, pointing out their advantages and giving list prices. Their No. 3 Water Pail, 12 quart, is sold at $2.50 per dozen, net, and the remainder of their list which is printed below, is subject to a discount of 33⅓ per cent., in lots of 25 dozen or more:

No.		Per doz.
6.	Fire Pails, Red Japan inside, 12 qt.	$4.25
9.	Slop Jars (with bail) Scotch Granite.	6.00
17.	Spittoons, Scotch Granite, 10-inch diameter	6.00
21.	Spittoons, Scotch Granite, 10-inch diameter	6.00
25.	Mat for Slop Jars and Spittoons, Scotch Granite, 17-inch diameter	4.00
29.	Mat for Slop Jars and Spittoons, Scotch Granite, 20-inch diameter	5.80
33.	Chamber Pails (with bail) tight cover, Scotch Granite, 12 quart	6.00
37.	Keelers, Scotch Granite, inside black, 11-inch diameter	4.00
38.	Wash Basins, Scotch Granite, 10½-inch diameter	2.00
41.	Wash Basins, Scotch Granite, 12-inch diameter	2.50
44.	Wash Basins, Scotch Granite, 13½-inch diameter	3.00
47.	Wash Basins, Scotch Granite, 15-inch diameter	3.50
50.	Commode Pails (with bail), Granite Ring, no cover, 12 quart	6.00
51.	Chamber and Commode Pails (with bail), Granite Ring and cover, 12 qt.	7.00

Paine, Diehl & Co., Philadelphia, Pa., advise us that the Keystone Mfg. Company have purchased the patent and plant for the manufacture of the Henis Fruit Press, Potato Masher, &c., and that they now have control of all Fruit Presses made under this patent. It is also intimated that the prices have been advanced.

Co-operation in Hardware.

As chroniclers of what is going on in Hardware, we are called upon to record from time to time various new departures, attempts in one way or another to deviate from the beaten paths of trade. Under this impulse the effort has been made to dispense with the services of traveling salesmen, to form syndicates for the massing of the orders of many retailers, and in other ways to devise new schemes which shall be serviceable in securing a profitable business. These new departures, however, in most cases result in nothing, and trade goes on as before in the old and well established channels.

These remarks have been suggested by circulars which have recently been sent out from Chicago to a number of retailers proposing co-operation between the jobber and retail merchant. The plan is to organize a corporation for the purpose of conducting a jobbing business on the co-operative plan, the surplus profits to be distributed among the customers according as they have contributed to the success of the business. It is obvious that the success of such a scheme is somewhat questionable, and would certainly depend very largely on the skill and ability with which details are settled and the plan is carried into effect. In its present aspect it is to be noted that this plan is not broached to the trade with the sanction of any names, the circulars relating to it being anonymous. The matter is, however, of sufficient practical interest to justify the publication of the circular relating to it, which we accordingly give below:

The jobber and retailer are the distributors standing between the manufacturer and consumer. Their expenses and compensation (profits) are a legitimate addition to the cost of production.

The struggle between the retailer to buy cheaper, and the jobber to hold his ground, is practically only a contest over the division of the margin between the cost of production and price at which it freely enters into consumption. It follows, if an equitable division could be agreed upon, the interests of both classes of distributors would be identical and that all expenses saved would go to increase of profits. The expense account representing money paid out is a heavy burden on almost every business, but there are other and quite serious drains on business which cannot be exactly valued. For example, the retailer in order to keep posted buys of several jobbers, devoting time to buying, keeping books and correspondence, which might be spent profitably in selling goods or studying the wants of trade; buys goods which he may not actually need, resulting in overstock; accumulates a stock of mixed brands and patterns which make a ragged appearance and operate against his sales; he lacks confidence (for he feels he must look for a motive) in the suggestions which the jobber from his wider experience might give as to condition of the market; as to profitable and desirable goods; or as to business methods productive of the largest results. On the jobber's side we find similar elements; each jobber shows his own individuality in selection of stock, but he must also be equipped to supply the retailer with goods of the same pattern or brand he is obtaining from another jobber; this results in larger stock. It also diminishes his power as a buyer, for it is obvious if he carries a number of varieties of the same article (where one might suffice), he diminishes his ability to distribute a very large quantity of any one on which his power in buying depends. By lack of confidence and interest he fails to derive that benefit he might from the opinions and experience of the retailer, and he will endeavor to force upon the trade goods which are not as desirable or fully abreast with the times. All these drags might be charged to expense, for they have operated to prevent complete success and the highest profit.

It seems possible that new methods of business may be evolved which will not only reduce the expense but also increase the efficiency, thereby distributing a larger volume of merchandise and securing to the distributors compensation (or profits) commensurate with the labor and risk involved. It does not seem to lie in a greater development of present methods, but, on the contrary, points to savings of expense now wasted in transferring merchandise from the jobber to the retailer, such as naming the greatest, the cost of traveling salesman system constituting nearly one-third the entire expense. Under present methods the advantages derived in buying of travelers are recognized; nevertheless it cannot be denied that the retail trade bears the expense of the system and that the retailer cannot, if he would, save himself the expense. Under another method of conducting business, it may be more advantageous to order direct of the jobber, and thus avoid the burden of salesman's expense.

Unity of interest is essential for the distribution at the least expense and greatest profit, and it can only be secured by co-operation between the jobber and retailer. Under this theory they become practically one, each necessary to the other, each entitled to his fair proportion of the margin between cost of production and price of consumption, and both working to the common end—reduced expense and increased volume.

Under the co-operative plan the jobber and retailer will have agreed upon a standard stock of goods suitable for the most progressive business. It will be thoroughly represented by catalogue, skillfully priced with reference to supplying the more profitable goods to the retailer at prices enabling him to increase his trade in such lines.

In addition there will be provisions whereby the co-operative retailer will share in the profits and savings over and above the agreed upon reasonable compensation of the jobber. Then it will be, beyond the possibility of question, absolutely to the interest of the retailer to buy direct of the jobber (for he will no longer need the services of the salesman to keep him posted daily) and to throw the entire volume of his trade there, because he has confidence he is buying his goods as low as they can be sold, and that he will participate in the savings of expense, as well as profits on the sales. In other words, it will be establishing the equitable basis of compensation (profit) of the jobber in advance, and thenceforth the sole concern of both will be centered in the common interest of building up the retail trade to the largest and most successful proportions—in a word, distributing the utmost volume of goods.

It is proposed to organize a corporation for the purpose of conducting a jobbing business on the co-operative plan, securing unity of interest between the retailer and the corporation, by distributing among the customers the surplus profits, according as they have contributed to the success of the business.

EXPECTATION.

1. The corporation will do a larger business than can be done under the present system with salesmen, and at less expense.

2. That there will be a saving in expense equivalent to a liberal percentage on purchases.

3. Losses by bad debts will be smaller.

4. By hearty co-operation the business will be largely developed in profitable specialties and distinctive brands, protecting and increasing the profits of our co-operative retailers.

5. That a large volume of sales will be made annually to retail dealers not in co-operation with us, and as the larger part of the profits of the business go to the co-operative retailers, they will be receiving tribute from their competitors, thereby increasing their advantage in competition with them.

The circular also contains a blank, the object of which is to elicit from the retailer information in regard to the feasibility of the proposed co-operation, and also in regard to other matters connected with it. This part of the circular is as follows:

Assuming a co-operative jobbing house has been established, carrying a perfect stock thoroughly represented by catalogue.

That prices average lower than under the present system.

That profits over and above reasonable allowance for capital, &c., shall be distributed at the end of the year among the retail dealers, in proportion as they have contributed to the profits by their business; and that you have perfect confidence in the house.

Please answer hereon and mail at once the following questions:

1. Can you dispense with the salesman's visits?.....
2. Can you order as satisfactorily by catalogue?.....
3. Can you keep your stock cleaner in buying only as you need goods?....
4. Can you do a larger and more satisfactory business when your stock is in straight lines of the same brands than when confusing a number of brands and patterns?.....
5. Is it to your advantage to control certain brands and patterns in your market?.....
6. And does it not enable you to make better profits?.....
7. Would you wish the exclusive right to represent the co-operative house in your town?.....
8. If the relation were established, about how many goods could you order from the co-operative house in a year?.....
9. Would it be of assistance to receive frequent confidential bulletins as to changes of the market, new goods, or such other general information as may be of interest, and tending to assist in increasing sales and profits?.....
10. Do you think under such an arrangement perfect mutual confidence will be established?.....
11. Do you think you would like to enter into a co-operative plan, provided all details are satisfactory?.....
12. Do you wish the opportunity to consider further information and plans in event it is decided to inaugurate a co-operative plan?.....

The above replies are given in strict confidence, and on the distinct understanding nothing therein contained obligates us to further consideration or attention to the matter.

Signed.... .....

Price-Lists, Circulars, &c.

The Ellrich Hardware Mfg. Company, Plantsville, Conn., have issued a Gun catalogue in which their line of Hardware specialties, including Saw Sets, Wrenches,

Screw Drivers, &c., is attractively represented. Excellent cuts represent the construction of their patented Rachet Screwdriver in the two styles in which they make it, and also their Eclipse Spiral Screwdriver. The boxes containing sets of these goods are also shown. After their Saw Sets and Wrenches their miscellaneous goods are represented. These include Scratch Awls, Belt Awls, Bull Rings, Steel Cap Chisel Handles, Nail Pullers, Pruning Shears, Adjustable Auger Handles and some other articles. The catalogue is conveniently arranged and well printed.

Montgomery & Co., 105 Fulton street, New York, issue a pamphlet entitled "Odds and Ends No. 3." It is devoted to the description of a variety of Tools, Supplies, Machinery, &c., including many staple articles and others which are comparative novelties. The descriptions given are especially full and satisfactory, and the catalogue contains a good deal of information and suggestions which will be appreciated by those for whom it is intended.

A very neat price-list has been issued by the American Stove Board Company, of 110 Ontario street, Chicago, Ill., and 283 Pearl street, New York. The goods noted in the list include Wood Lined Crystal Boards, Wood Lined Oxidized Boards, Wood Lined Embossed Boards, Paper Lined Zinc Boards, Paper Lined Embossed Boards, Paper Lined Crystal Boards, Paper Lined Oxidized Boards and the new Tacoma Stove Boards. All of these are made both round, square and oblong, and in a variety of sizes. The features of the new Tacoma Boards, as noted in the circular, are that it will not tarnish, fade or lose color, and has the appearance of polished embossed brass. The prices, of course, are given of all the styles and sizes of boards.

Irving D. Booth, Elmira, N. Y., issues a folder relating to Heavy Hardware, Iron, Steel, Nails, Wire and Tin Plates, thus calling attention to these goods in such a way as to serve the convenience of his customers.

Layman & Carey Company, Indianapolis, Ind., issue a Gun catalogue, which is devoted to Shot Guns, Rifles, Revolvers, Loaded Shells, Ammunition and an interesting variety of Sporting Goods. It is accompanied by a discount sheet and price current, in which some quotations are made which are deserving the attention of the trade.

The Hoggson & Pettis Mfg. Company, New Haven, Conn., issue under date July, 1890, a catalogue of their Sweetland Chuck, in which the illustrative and descriptive matter is especially complete. Some testimonials from parties who have used the Chuck are incorporated, in which the strength, accuracy and convenience of the device are alluded to. The Porter Belt Tightner is also represented. A circular is also issued relating to the Standard Automatic Safety Punch, which is designed for cutting out the figures in checks. The advantages of the Punch are enumerated. Another catalogue is devoted to the Morris Typewriter, a full description of which is given and the points made in regard to it indicated.

The Field Force Pump Company, Lockport, N. Y., issue a circular showing their Spraying Apparatus, including the Victor, Duplex and Richard King, and also the Economy Garden Engine. A variety of Nozzles are also shown. We understand they are also expecting soon to add some new machines.

Kingery Mfg. Company, Cincinnati, Ohio, issue a catalogue relating especially to their Cyclone Ice Cream Freezer and their Gelatine and Crystal Flake designed for improving ice cream, &c. Kingery's Steam and Hand Power Peanut and Coffee Roasters and Kingery's Eclipse Ice Shaver are also represented. The last half of the catalogue is devoted to the exhibition of a varied line of confectioners', bakers', ice cream manufacturers' and restaurant supplies

Empire Rubber Company, Trenton, N. J., manufacturers of a full line of Mechanical Rubber Goods, as well as Rubber Cloth for carriags, saddlery and similar work, are devoting special attention, they advise us, to Hose for fire protection, as well as for fire departments, and are now offering under their A1 grade a Rubber Fire Engine Hose, which is usually made 2½ inches, four ply. The quality of this Hose is especially emphasized. To meet the demand for Cotton Hose their King brand, which is made in every size, is offered, and they are making a leader of their double jacket 2½ inch.

The Hills Archimedian Lawn Mower Company, Hartford, Conn., illustrate on separate cards the two machines they are putting on the market, the Hartford and the Leader. They call attention to the special features of construction of these machines.

J. B. Shannon & Sons, 1020 Market street, Philadelphia, Pa., issue an illustrated catalogue and price-list of 128 pages devoted to Builders' Hardware. In the introductory remarks they explain that in preparing the catalogue they have endeavored to make it as useful as possible to their customers, as well as an advertising medium for themselves. It is convenient in arrangement and fully illustrated.

The Francis Manufacturing Company, Spring City, Pa., are making a line of National Cellar Grates, consisting of Grate, Screw and Glass combined. Half the space is glass and half screw, connected to a large door. A glass door, intended to cover the screw part, is also hung to the same large door. The glass door, when shut, excludes the air and cold, and when open admits ventilation. These, we are advised, are made in seven sizes, from 13 x 21 to 30 x 42. The large door can be removed when desired. Window screws, embodying the same advantages, are also manufactured by the company. They also make a Hitch Post or Box, which is inserted in the pavement next the curb; and, when not in use, is thus entirely out of the way. When in use the lid is thrown back, and one end of chain taken and fastened to bit wing, while the other is permanently fastened at the bottom of the Box. When done using the chain is dropped back into the Box and the lid dropped down. The Box is cast iron, with a flange on the bottom, on which the pavement rests and holds it down.

The Grand Rapids Hand Screw Company, of Grand Rapids, Mich,, manufacturers of Hand Screws, Cabinet Clamps and Benches, issue a c circular in which these goods are illustrated and described. Particular attention is called to the manner in which their spindles are made. The threads are described as sawed by a patent process, which leaves the wood solid instead of cutting the threads with a V tool, which is referred to as weakening or straining the grain of the wood. We are advised that they use only second growth hickory, thoroughly dried, for all spindles, and the best selected hard maple and birch for jaws. The company are having a gratifying trade on their Cabinet Makers' Bench which was recently put on the market, having shipped within the past few weeks to San Francisco, Fort Worth, Texas, Atlanta, Ga., and New York, as well as to numerous points nearer home.

The E. S. Greeley & Co., 5 and 7 Dey street, New York, issue an illustrated price-list and catalogue of Telegraph, Telephone, Electric Light, Electric Railway and Electric Power supplies. The catalogue is of 370 pages, bound with stiff covers. The extent of electric development, and the tools and apparatus adapted for its use in various departments, is indicated by the contents of a book of this kind. Attention is called to the fact that while the multiplicity of devices and patterns employed in installation of Electric light, power and locomotion of the various systems, is so great as to prohibit their being catologued entire until greater uniformity is attained. Customers will be supplied with the appliances employed in any of the standard systems when such sale to the general public is permitted. They handle a full line of Railroad supplies, a large catalogue of which goods has been familiar to the trade for some time. They are also special and general agents for the Kalamazoo Railroad Velocipede Cars.

Chantrell Tool Company, Reading, Pa., for whom John H. Graham & Co., 113 Chambers street, New York, are general agents, report a good business in all departments. Among other goods manufactured by them, are a line of mahogany-finished Screw Drivers, Chantrell's Patent Tool Handle, in two sizes, with different assortment of Tools, Bit Braces, Drills as well as a Drill Chuck. Chantrell's Patent File Handle is another of their specialties, and is described as being made of the best material and in a substantial manner.

Trade Topics.

A Hardwareman, writing from Virginia, inquires whether the statement that American Cutlery is not equal to English goods on account of the peculiar quality in the water with which the Cutlery is tempered, is true, or whether it is because the American cutlers have not as much experience in tempering as their foreign competitors. Our correspondent evidently writes under the erroneous impression that English Cutlery is, on the whole, superior to American—a fact which cannot be conceded, and which would be earnestly and successfully disputed by manufacturers and well-informed parties in the trade. Our correspondent probably has in mind some very high-class English Pocket Cutlery, which is as good as anything made in this country, forgetting, however, that on the average American Cutlery is probably superior to English cutlery, especially in view of the fact that a very low grade of Cutlery is largely made in England. In regard to the method of tempering Cutlery, we understand that American manufacturers found some difficulty in hardening in water, but have long since ascertained that oil was the best thing to use in hardening and tempering, as the work is much more uniform, while the quantity of work turned out is much larger than can possibly be the case when water is used. We are advised by some well-informed parties, that American Cutlery of the best make is equal if not superior to the English in temper, and manufacturers are willing to put their best goods against any imported. The enterprise of American manufacturers in using improved devices and methods has much to do with the success they have achieved in establishing a large trade in competition with the English makers.

The desirability of having orders promptly shipped is recognized by the trade, and complaints are frequently made of neglect on the part of manufacturers and merchants. In the following communication, it is pointed out it, will be observed that the fault is often with the party ordering goods on account of some carlessness in explaining precisely what is wanted:

Referring to "Promptness in Filling Orders," under Trade Topics of May 8, 1890, we think usually, when there is any delay in filling orders, the cause can be traced to party doing the ordering. Many mail orders are written in a hurry while customers may be talking and the particulars required to define the article fully are often omitted. For instance, a merchant will order a Grate for No. 8 Cook Stove, same as you sent me two years ago. The foundry receiving the order, make a full line of both Coal and Wood Cooks; so if they knew the name of the Stove he wanted the casting for, would have to write for date and whether it was wood or coal. In a special order for Locks to come by express, the merchant neglects to state what kind of Knobs he wants, whether porcelain, jet, bronze, or that he wants no Knobs. Others send orders with no name signed, or mail with no stamp on the envelope. It is one of the most important things in a wholesale house, and kept most constantly in view—the filling of orders promptly. Some houses make it a rule to get the goods out of the house the same day the order arrives, and usually succeed unless there are outside goods to buy. An order for regular goods given a traveling man, if mailed promptly, generally gets the goods back in satisfactory time, as it is his business to write orders correctly, giving numbers and sizes. There are times, however, when needless delay is rightly laid at the door of the wholesale house, when it is pure carelessness or neglect that the goods are not sent. Moderation and forbearance on both sides are desirable, whatever the grievance may be.

In continuation of the discussion in regard to the sale of Binder Twine, we have the following from a Hardwareman of this State:

We note what Hardware merchant in Virginia says regarding Binder Twine. To-day I received some Twine from a Harvester manufacturer. Said Twine bears card of National Cordage Company, is marked 50 pounds Standard Twine. It weighed 48 to 49 pounds sack, Twine and Binding Cord. At the same time I received some Jute Twine under apparently like circumstances from a manufacturer of Jute Twine only, whose office is at 36 Dey street, New York City, which weighed 50 pounds with sack, Twine and Binding Cord. I have no doubt but that both kinds weighed more when first put up but have dried out, which is a decided advantage to the consumer, as any Cordage is larger the drier it is, and the drier it is the worse for the retailer. Some retailers have a certain price by the sack—for instance, 16 cents, and 16¼ cents by the ball or any part of sack. I find the farmers trade among themselves in Twine by calling the number of balls that many twelfths of a bale. If they sell five balls and Twine is worth $8 per bale, they charge for five-twelfths bale of $3.33, there being twelve balls in every bale or sack. I believe the maker of the Jute Twine was putting up 50 pounds net of Twine, but he could not control the shrinkage after leaving his hands. If manufacturers of Twine would make every ball of same weight it would seem a very fair way to sell Twine by the bale or twelfth of a bale, and the retailer have the sacks (which are of little value) for the trouble of extra figuring, weighing and charging, as the most of it here is credit.

With reference to the system for managing catalogues, price-lists, &c., which was given in our issue July 3, a correspondent refers to it as being an excellent one. He makes the suggestion, however, that catalogues or books placed upon a shelf in the manner shown will become quite dusty and consequently disagreeable to handle. To meet this objection he proposes that the shelving have a sliding or hanging door, or else a curtain. The trade will concede the advantages of this improvement, but will recognize also the fact that the catalogues are not quite so conveniently accessible. Many would doubtless prefer the protection suggestion, while others would approve the arrangement as described by Mr. Macey. In such minor details it is to be expected that merchants will meet their own views.

Items.

Henry Disston & Sons have removed their Chicago branch from 259 Randolph street to their new building on the northeast corner of Washington and Jefferson streets. This building was designed expressly for their purposes. It occupies a lot 22 x 102 feet, and consists of six stories and a basement. It is built of brick, with stone trimmings, and is of mill construction inside. The firm use three floors for their own purposes and rent the remainder to machinists and other light manufacturers. They not only carry large stocks of Saws but have their shops in this building, in which they do a great deal of work required by their Western trade. They here execute orders for Saws which demand quick delivery, having special facilities for making circulars and for altering adjustments, on which much time would be lost in awaiting shipments from the main factory in Philadelphia. They also do a good deal of job work. The new building is located most admirably for business purposes, being in the heart of the Chicago machinery district. The new West Chicago cable road passes immediately in front of it, thus making it easily accessible from all parts of the city. The business of the Chicago branch is continually increasing, keeping in line with the growth of the West. Notwithstanding the lower range of prices in recent years, the volume of trade increases in value, showing a gratifying comparison with past years. H. D. Nicholls, the very efficient manager, continues in charge of this branch.

Cleveland Target Company, Cleveland, Ohio, have recently issued a circular relating to litigation on Targets. They also state that they have under consideration a new style of Trap which they will soon be able to put on the market.

C. F. Guyon Company, 99 Reade street, New York, are, we are advised, sole agents for the sale of the Syracuse Parlor Door Hanger in New York and vicinity, Philadelphia and the State of New Jersey. A description of this Hanger, which is made by the Syracuse Door Hanger Company, Syracuse, N. Y., was given in our last issue.

On page 86 of this issue appears the advertisement of the Covert Mfg Company, West Troy, N. Y., in which is shown a fine illustration of the main building of their works. The demands for their goods have, it is stated, reached such proportions that large additions to their works have been made from time to time, and they have been compelled to add largely to their manufacturing facilities. They will in a few days place in position a new and powerful Corliss Engine, and also a large amount of improved machinery, to enable them to meet the demand for their goods.

George Havell, Newark, N. J., is putting on the market a line of Solid Wessell Silver Cutlery, which is made in the regular shapes and styles and with various patterns of handles. These goods are made of solid metal, which is designated Wessell Silver and is described as drawn to a steel temper. That the knives can thus be sharpened the same as if made of steel, that the metal keeps a high polish with occasional cleaning and the attractiveness of the metal are points made in regard to it. It is thus referred to as always bright, not liable to rust and easily kept sharp, and it is stated that fruits of any kind, even lemon juice, will not stain it.

T. W. Root, Detroit, Mich., has issued a comprehensive and attractive circular relating to Hardware Catalogues, Price Cards and Price Books. In it illustrations are given, showing the style of Root's Handy Cloth Bound Hardware Price Cards, which are well known to the trade and have met with a large sale. A description and price-list are given of the 40 cards prepared for special lines which are offered to the trade. It is to be observed that a reduction has been made in the price of a good many of these Cards. It is stated also that set No. 4 has been discontinued, and No. 5 takes its place. The circular also illustrates *The Iron Age* and Lamberson's Price Books, with others published by Mr. Root. Attention is also called to unbound illustrated Hardware Price Books, which are intended for salesmen and buyers. As a result of publishing catalogues for many wholesale and retail houses, Mr. Root explains that he has 2440 printed and illustrated Hardware pages, 7 x 9¼ inches, in unbound sheets. These sheets are furnished in assortments indicated in the circular, as follows:

No. 16, for salesmen and buyers, 2440 pages in unbound sheets, with over 10,000 cuts, express charges prepaid, per copy..... $9.00

No. 25, for traveling salesmen and buyers, 3000 pages in unbound sheets, all without folios, and showing over 13,000 cuts, express charges prepaid, per copy..... 11.00

From such an assortment of printed matter it is expected that the merchant will be able to make such a selection as will suit his wants, and have a very complete catalogue, which will be practically his own, at a nominal cost.

Our readers will observe the advertisement on page 55, in which the American Knife and Razor Company, St. Louis, Mo., call attention to the American Cutlery of high grade which they are offering. Among these it will be observed are the American Knife Company's Pocket Cutlery, Meriden Table Cutlery, Carvers, etc., Star Scissors and Shears and other goods.

American Screw Company, Providence, R. I., are now prepared to furnish their Rogers' Drive Screw in all leading sizes, that is, from ⅛ inch up to 3½ inches. We are advised that these Screws are proving very popular, and that their low price is not the only strong point in their favor.

R. E. Bonnell, of the Nubian Iron Enamel Company, Chicago, says that trade in their line is remarkably active. The prospects are bright for an increase of at least 50 per cent. over the largest year they have yet had. This argues well for Bonnell's Nubian, as it is but a few years since the company had to hustle for trade instead of hustling to fill orders, which is their present experience. Those who use Asphaltum or similar blacks should get quotations from this company, who submit a long list of indorsements from firms of the highest standing who use the goods.

The company also manufacture Bonnell's Nubian Pipe Cement for plumbers' and steam-fitters' use, which is intended as a substitute for red lead. It is a composition of Nubian, graphite and oil in the proper proportions to make a perfect joint. It is about the consistency of grease, so that it never separates like red lead and oil, and it also never hardens in the can. It is stated to be cheaper than red lead.

The works of the Yale & Towne Mfg. Company, Stamford, Conn., were closed last week, on account of a strike by the brass molders, who made demands which were considered unreasonable by the company. This, with a trifling exception, is, we are advised, the only difficulty of the kind that has occurred during the 21 years the company has been in operation—a fact which is evidence that their workmen have uniformly been treated with fairness. In this controversy it would appear that the company have shown due regard to the interests of the men, but are not disposed to be dictated to in regard to the management of their business. In fact, the real issue is regarded as involving the right of the company to manage their own business and the right of workmen desiring employment to freely come and go without molestation. The unfortunate result of this controversy, so far as the operatives are concerned, is throwing more than 800 persons out of employment. Regarding the matter as involving an important principle, the company evince no disposition to yield their position and the works continue closed, the manager having entered upon a vacation. The company, however, have, we understand, a good stock of goods, and are in a position to fill regular orders promptly. They are also enlarging their Brass foundry, which heretofore has been somewhat inadequate, and expect to be in position before long to supply all goods without delay.

How Should Retailers Advertise their Business?

In regard to this practical question, which has already been discussed in recent issues, we have the following excellent suggestions from an enterprising Hardware concern:

We keep our name before the public by using the papers in the county. In relation to advertising our experience teaches us that to draw the attention of the public an advertisement in the local papers is far ahead of circulars, flyers, &c., if conducted as it should be. Our rules are:

1. Do not crowd too much in the space to be occupied.
2. Advertise some specialty, and at every change in the ad. have a short local referring to it.
3. Change the ad. as often as once in two weeks (if a weekly paper).
4. Advertise nothing but what you can and will do, and do it.
5. Do not misrepresent goods in the ad. By following these rules we have made trade, friends and customers (who stay with us), and have gained the confidence of the people. Concerning circulars, flyers, &c., in our opinion it is money thrown away in most cases, as we think it safe to say not one person in ten who receive them peruses their contents.

The suggestions contained in the letter given below, which comes to us from a successful Connecticut house, will be found of service:

We think the best way for a retail Hardware merchant to advertise is to have an attractive and well-arranged store, with experienced and obliging salesmen. A glaring advertisement may attract a customer to the store, but if the goods are poorly arranged, or the clerks are boys or indifferent salesmen, the customer is not apt to come again. On the other hand, if the store is attractive and the clerks obliging, the customer will appreciate the attention paid him and will call again. If handling a number of specialties that it is desired to push, we find it a good plan to get out business cards and circulars for each specialty under the head of a department. For example, if making a specialty of Drawing Materials, Electrical Materials and Builders' Hardware, get out a business card headed Drawing Department, another headed Electrical Department, and another headed Builders' Hardware Department. Get out circulars under the same headings, stating what you carry in this line and what inducements you have to offer. These cards and circulars should be mailed to the people using these goods in your own and neighboring towns. If handling and making a specialty of Agricultural Implements, it pays to advertise in country papers of nearby towns. Advertising is cheap in these papers, as a rule, and the country people always read their papers, advertisements and all.

The necessity of giving attention to the form of advertisements and changing them frequently is referred to in the following terms by correspondents in New Hampshire:

We are glad to see this matter brought up, as we have been considering the matter of advertising. We do not think for a country merchant a general ad. in local paper pays, but are of the opinion that one calling attention to special lines and changed often would do good. We think a concern should keep their card in local paper. Possibly a circular calling attention to seasonable goods and mailed to customers might be a good thing.

The following excellent suggestions come from a correspondent in Connecticut:

We believe that four things are necessary to success in advertising. Briefly stated, they are: Having something to offer for sale; knowing where to offer it; knowing how to offer it, and never making a statement that is untrue or calculated to mislead. Personally, we are very particular about the technical part of advertising—the choice of type, &c.—but think that is covered by knowing how to offer goods.

In the letter printed below our correspondent refers to the difficulty of the question and the fact that a good deal of unprofitable advertising is done:

I have an idea that there is no one item of business expense which costs so much and is so little cared for as advertising. Most merchants seem to think there must be about so much money paid out for advertising, but they do not know whether they are getting their money's worth or not, or whether they can or cannot get as much benefit from some other mode of advertising. I think it would be of great benefit to the trade if some of the successful advertisers would tell us how they do it. There are none of us that "know it all," and wise men can learn of fools, and I may have a point or two which may be of use to my fellow-craftsmen which I can give them later. In the meantime I would be very glad to hear from older men in the business on this topic.

The Hardwareman, whose letter we print below, writes in a somewhat similar tone:

I have tried newspapers, but as they are in the county seat they don't seem to do me any good. As to circulars, they will not do unless you can give the people something attractive and worth while to save and then it becomes a reminder of your business. Otherwise I have not found many benefits from advertising.

In the following extract our correspondent refers to the fact that many dealers have to meet not only the competition of the trade, but also of manufacturers, who are in many instances going direct to the consumer:

From my observation small towns should take advantage of every medium, but the larger towns, and especially the cities, require to use caution as they have not only local competition to combat, but the manufacturers also, who have for a long time (and are still doing it) gone direct to the consumer and solicited, giving in many cases the same terms they would to a dealer. Hence the dealer is obliged to use the same medicine and present his wares in person, while if he relied on the advertising medium to bring him his trade, his business would soon grow small.

The utility of circulars, quotation sheets, &c., is referred to below, as well as other methods used for keeping the name of the house before the public:

We use the locals in our weekly papers in one or two line ads., but do a great deal of circular work through the mail, often accompanied with personal letters and quotations, or both, and find it very profitable, as at the present price of postage we can load an envelope pretty well, and we have a great deal of printed matter sent us gratis, with our name printed on, which make a cheap ad. for us. We also use an envelope at county and town fairs and load them with such printed matter as we happen to have, and find people will carry them home, as they are easily put in the pocket, and when they get into a house most of them are read, and we make a good many sales. For regular customers, or in answer to questions regarding goods, we use an envelope printed in red ink, and get a large part of them back with an order inclosed. We believe in keeping our name before the people constantly, in some way, and keep them talking about us and our store. We have also found that a well-kept and attractive store has paid us very well.

Advertisements, circulars and calendars are referred to in the letter from a leading New England house:

From our experience during the past 30 years we are satisfied that advertising pays; that our advertisement in a good newspaper is much better than circulars, and that short displayed advertisements and specialties pay better than long ones. We have received a good deal of benefit from a small calendar with a different advertisement for each month, as it keeps your name (which we consider a good thing) before the public every day in the month and every month in the year.

Our correspondent, whose letter is given below, apparently gives but little attention to newspaper advertising, relying upon leaflets or circulars and catalogues:

We have no particular system of advertising. We depend largely on mailing slips (inclosed in out-going correspondence) for placing specialties before our customers, while we advertise general lines by means of catalogue.

The next letter, however, alludes to the advantages of advertising in local papers, while the importance of presenting bargains is also referred to:

We consider a fair amount of advertising in the local papers with frequent changes to call attention to seasonable

goods as the most profitable form of printed advertising we can use. We also think that a good bargain will advertise itself and bring custom, and in our judgment is the best kind of an advertisement.

The use of newspapers in calling attention to the business and of circulars sent to customers is the method adopted by another correspondent:

Our method has been to advertise in our local papers and mail printed matter direct to consumers, so far as possible.

The following statement of the methods found useful in connection with the conduct of a successful business in New Eng land will be found suggestive:

I am now using to advertise locally yardsticks, 1-foot rules, blotting pads, thermometers, circulars of all kinds, stenciled boards and signs. I also have painted signs on fences, barns, bridges, rocks, &c. This I do in addition to advertisement in the local papers, but I have less faith in the papers than in direct advertising in the way I have mentioned. Circulars are put in all bundles and packages and I find the circulars, yardsticks, &c., mentioned when people come to my place of business. In short, in my opinion this is the most satisfactory way to call attention to special lines of goods, but the circulars and other things to be effective should have some value. The thermometers I use cost me about 75 cents each, but will be before the public for years. A yardstick will go into a family who will not throw it away. A tasty sign on a prominent barn or fence will remain for years. I do not believe much in the small circulars sent broadcast with nothing to attract or retain their remembrance.

Remittance Blank.

We are indebted to the Pennsylvania Supply Company, Wilkesbarre, Pa., for the following form used in making remittances. It will be observed that it shows the original amount of bill discount, freight, &c., and the net amount of each bill, together with the total of bills and amount of check sent. It can obviously be returned as a receipt and is generally, we are advised, so used. The column between freight and net, which in the instance given below, is devoted to deductions for breakage, is left, it will be observed, without a printed heading, and can be used for "returned," "short," "damaged" or any other deduction. The blank, as given below, is reduced in size, its full width being 6 inches and its length 9½ inches:

PENNSYLVANIA SUPPLY COMPANY, LIMITED.

Jobbers of

GENERAL HARDWARE, RAILWAY, MINE AND MILL SUPPLIES, MACHINERY AND TOOLS.

Office and Warerooms, 50 S. Canal St.
Telephone 1542.

WILKES-BARRE, PA., *May 26*, 1890.

Messrs. John Smith & Co.

City.

Dear Sirs:

Herewith find check for $85.85 in payment of bills, as below. Please acknowledge receipt.

Yours truly,

W. Leavenworth, Treasurer.

Dated.	Amount.	Discount.	Freight.	Broken.	Net.	Total.
May 20	15 —	30	25	10	14 35	
" 22	30 —	60	50	50	28 40	
" 24	45 —	90	50	50	43 10	
						85 85
	90 —	1 80	1 25	1 10		

Exports,

PER BARK STAR OF THE EAST, JUNE 24, 1890, PER WELLINGTON, NEW ZEALAND.

By Mailler & Quereau.—160 packages Agricultural Implements.

By W. H. Crossman & Bro.—1 dozen Store Trucks, 4 Forges, 75 pounds Nails, 5 Hay Rakes, 1 case Carriage Hardware, 2 cases Builders' Hardware.

By Arkell & Douglas.—3 dozen Wringers, 48 dozen Lampware, 1 gross Traps, 29 dozen Platedware, 1 dozen Ladders, 22 Stoves, 13 Wringers, 1½ dozen Churns, 4 dozen Axes, 12 dozen Traps, 73 dozen Pumps, 2 dozen Traps, 28 pounds Oil Stone, 2 dozen Hammers, 8 dozen Wardrobe Hooks, 99 pounds Castings, 1½ dozen Wringers, 15 Saws, 12 dozen Rakes, 1 dozen Axes, ½ dozen Hoes, 12 dozen Egg Beaters, 9 dozen Pumps.

By H. W. Peabody & Co.—44 packages Agricultural Machinery, 39 cases Hardware, 66 Churns, 1 case Rakes, 18 pairs Springs, 300 pounds Nails, 7 cases Axles, 5 crates Churns, 4 packages Hardware, 2 crates Traps, 1 case Stamped Ware, 3 packages Pumps, 4 crates Churns, 8 cases Hardware.

By R. W. Cameron & Co.—1500 pounds Manila Cordage.

By the F. B. Wheeler Company.—7 packages Hardware.

By Welsh & Lea.—20 cases Axes, 3 cases Hardware.

By R. W. Forbes & Son.—2 cases Ranges, 1 case Hoe Handles, 1 case Lining Nails, 1 package Hardware, 1 case Mangles, ½ dozen Carpet Sweepers, 11½ dozen Rakes, 10 dozen Snaths, 2 packages Hardware, 1 dozen Wringers, 1 dozen Seed Sowers, 16 cases Lawn Mowers, 14½ dozen Forks, 8 packages Hardware, 1 case Store Trucks, 20 dozen Snaths, 6 cases Garden Tools, 20½ dozen Axes, 9 crates Churns, 1 case Lampware, 2 packages Hardware, 1 cask Pump Fixtures, ½ gross Egg Beaters, 1 gross Polish, 6 packages Hardware, 1 gross Snaths, 18 dozen Forks, 14 dozen Rakes, 4 cases Hardware, 2 cases Garden Tools.

By McLean Bros. & Rigg.—3 dozen Scythes, 1 dozen Wringers, 60 pounds Nails, 15,000 Bolts, 1 case Hardware, 5 packages Hardware .2 dozen Dashers, 2 dozen Springs, 7 dozen Axes, 9 Churns, 10 dozen Wrenches, 1 dozen Saws, 2 dozen Oil Cans, 15 packages Hardware, 6 Mangles, 6 Wringers, 9000 Cartridges, 3 packages Lampware, 6 cases Axle Grease, 2 crates Road Carts, 47 Pumps, 400 pounds Nails, ¼ dozen Carpet Sweepers, 7 Stoves, 26,000 Cartridges, 8 Stoves, 64 boxes Horse Nails, 6 dozen Egg Beaters, 1 dozen Dashers, 200 pounds Nails, 6 dozen Axes, 20 dozen Axes, 1 Road Cart, 2 dozen Locks.

FOR LYTTLETON.

By Mailler & Quereau.—11,252 pounds Barb Wire.

By Arkell & Douglas.—400 pounds Nails.

By H. W. Peabody & Co.—2 dozen Hardware, 40 packages Hardware, 12 cases Agricultural Implements, 1 cask Pumps, 1000 pounds Nails, 2 cases Brushes, 6 dozen Barometers, 1 case Axles, 2 cases Rakes, 9 dozen hoes, 2 cases Wheatstone, 2800 pounds Nails, 2 cases Hardware, 2 cases Wringers, 71 packages Hardware, 13 dozen Barometers, 18 dozen Brushes, 12 dozen Oilers, 36 Wringers, 1 crate Oil Stoves, 2 Pumps, 9 dozen Traps, ½ dozen Sweepers, 9 case Stampedware, 1 case Strops, 2000 pounds Horse Nails, 24 Wringers, 6 Forges, 1 case Bolts, 12 cases Lawn Mowers, 2 cases repairs for Mowers, 1 case Hardware, 1700 pounds Nails, 3 casks Pumps, 7 cases Hardware, 1 case Rakes, 1 case Hardware.

By Ilsley, Doubleday & Co.—2½ gross Axle Grease, 90 pounds Axle Grease, 4 dozen Brushes.

By A. Field & Co.—8 Stoves, 6 Drills, 3000 pounds Horseshoe Nails.

By Coombs, Crosby & Eddy.—1320 pounds Horse Nails, 8 Scales, 3 dozen Agricultural Forks, 5 dozen Edge Tools, 4 dozen Saws, 9 gross Hardware, 2 dozen Axes, 82 dozen Hardware, 1 dozen Scales, 30 dozen Carpenters' Tools, 5 gross Hardware, 31 Pumps.

By The F. B. Wheeler Company.—2 dozen Axes, 38 gross Lead Pencils, 9 packages Hardware, 1 case Hardware, 4 dozen Lawn Mowers, 1 case Hardware, 3 cases Gearing, 6 dozen Whip Sockets.

By Reed & Barton.—127 pounds Platedware.

FOR WELLINGTON AND LYTTLETON.

By R. W. Cameron & Co.—50 dozen Axes, 10 dozen Hardware, 2 dozen Axes, 3 dozen Churns, 15 dozen Forks, 1½ dozen Pumps, 5 dozen Whip Sockets, 7 Lawn Mowers, 1270 pounds Horse Nails, 7 Lawn Mowers.

PER SHIP EAST LOTHIAN, JUNE 28, 1890, FOR MELBOURNE, AUSTRALIA.

By Lalance & Grosjean Mfg. Company.—588 pounds Household Utensils.

By R. H. Dana & Co.—42 dozen Axes.

By Peck, Stow & Wilcox Company.—1008 pounds Hammers.

By Edward Miller & Co.—12 packages Lamp Goods.

By Walter A. Wood.—203 packages Harvesters and Binders.

By Plumb, Burdict & Barnard.—11,380 pounds Iron Bolts.

By Winchester Repeating Arms Company.—36,000 Cartridges, 100,000 Primers.

By The F. B. Wheeler Company.—10,400 feet Wire Cloth.

By Welsh & Lea.—9 cases Hardware, 6 dozen Hatchets, 4 cases Iron Bolts, 3 cases Forks, 2 cases Snaths.

By Meriden Brittania Company.—3 packages Platedware, 16 boxes Plated Ware.

By W. H. Crossman & Bro.—21 packages Pump Parts, 28 packages and 1 case Hardware.

By H. W. Peabody & Co.—14 packages Lawn Mowers, 30 dozen Buckets, 5 crates Fly Traps, 12 dozen Lawn Sprinklers, 6 dozen Bells, 39 dozen Forks, 20 cases Hardware, 2 cases Hardware.

By Morris, Strouse & Co.—1 gross Mop Handles, 2 dozen Wringers, 5 dozen Stencils, 8 dozen Wrenches, 12 dozen Axes, 16 dozen

Hatchets, 12 dozen Gate Hinges, 5¼ dozen Planes, 6 dozen Carpenters' Gauges, 6 dozen Bevels, 2 dozen Planes, 12 dozen Carpenters' Gauges, 8 dozen Try Squares, 6 dozen Spoke Shaves, 3½ dozen Planes, 2 gross Hammers, 4 dozen Bench Screws, 12 gross Hat and Coat Hooks, 1 gross Tack Hammers, 1 gross Pulleys, ½ gross Balances, 3 gross Adhesive Hooks, 36 gross Scroll Saws, ½ dozen Razor Strops, 2 dozen Carpet Sweepers, 12 dozen Razor Frames.

By Arkell & Douglas.—20 dozen Axes, 6815 pounds Axles, 5730 pounds Bolts, 1000 pounds Nails, 1 gross Vises, 15 dozen Rakes, 10 dozen Snaths, 12 dozen Forks, 30 dozen Forks, 10 dozen Scoops, 6 gross Axle Grease, 3 dozen Money Drawers, 145 pounds Nails, 38 dozen Locks, 32,450 pounds Axles, 2440 pounds Bolts, 2 dozen Hat Chests, 3800 pounds Bolts, 2 dozen Axles, 201 pounds Sash Cord, ½ dozen Bells, ½ dozen Rakes, 3 dozen Toy Wagons, 539 cases Harvesters and parts, 1085 pounds Iron Rakes, 3150 pounds Forks, 2810 pounds Rake Handles, 170 cases Harvesters and Parts, 558 cases Harvesters and Parts, 340 pounds Forks, 285 pounds Rake Handles, 84 cases Harvesters and Parts, 395 pounds Platedware, 1220 pounds Forgings.

PER SHIP GEO. R. SKOFIELD, JUNE 30, 1890, FOR MELBOURNE, AUSTRALIA.

By W. H. Peabody & Co.—433 cases Agricultural Machinery.

By W. James.—1 case Axles.

By Welsh & Lea.—7 cases Iron Bolts.

By B. F. Avery & Sons.—15 boxes Planters, 1 box Plows.

By Healy & Earl.—2 cases Woodworking Machinery.

By Meriden Britannia Company.—3 boxes Platedware, 27 packages Platedware.

By W. K. Freeman.—65 dozen Forks, 18 dozen Rakes, 10 dozen Hay Forks, 1695 pounds Handles and Snaths, 61 cases Hardware.

By W. H. Crossman & Bro.—12 gross Hinges, 16 dozen Grindstone Fixtures, 19 cases Hardware, 14 Air Guns, 6 dozen Lawn Sprinklers, 2 cases Hardware, 26 dozen Axes, 2½ dozen Call Bells.

By Strong & Trowbridge.—20 dozen Forks, 1 dozen Mangles, 2 dozen Saws, 30 sets Axles, 20 dozen Forks, 60 dozen Spades, 1 dozen Mangles, 24 dozen Saws, 30 sets Axles.

By R. W. Forbes & Son.—50 gross Lead Pencils, 2 boxes Carriage Hardware, 2000 pounds Nails, 144 dozen Axe Handles, 3 dozen Tobacco Cutters, 17 cases Hardware, 2 cases Lawn Mowers and Parts, 1 package Fish Rods, 48 sets Axles, 8 cases Carriage Hardware, 43 cases Hardware, 5 gross Fly Traps.

By McLean Bros. & Rigg.—618 packages Harvesting Machinery, 200 Plows, 4½ dozen Meat Choppers, 8 dozen Wringers, 6 dozen Castors, 12 dozen Mop Handles, 1½ dozen Grindstones, ¾ dozen Wrenches, 3 dozen Pumps, 10 dozen Locks, 4½ dozen Augers, 3 dozen Seed Sowers, 3 dozen Lamps, 1 cask Graniteware, 22 dozen Thermometers, 16 Chucks, 2 cases Hardware, 50 dozen Planes, &c., 1½ dozen Bench Stops, 6 dozen Braces, &c., 12 gross Sash Cord.

By H. W. Peabody & Co.—1 crate Fencing, 7 cases Bolts, 10 cases Hardware, 2 cases Lining Nails, 44 cases Hardware, 8000 Cartridges, 18 dozen Forks, 3 cases Hay Knives, 2½ dozen Wringers, 6 cases Hoes, 1700 pounds Horse Nails, 15 dozen Rakes, 20 cases Hardware, 8 sets Axles, 3 cases Hardware, 2 cases Nails, 1400 pounds Nails, 22,400 pounds Barb Wire, 38 cases Skewers, 42 cases Hardware, 1 box Wire Mats, 937 packages Agricultural Implements, 2 cases Sandpaper, 1 case Hardware, 2 cases Sandpaper, 1 case Sinks, 2 packages Hardware, 1 case Hardware, 1 case Iron Castings, 1 case Axles.

PER BARK THURSO, JUNE 30, 1890, FOR CAPE TOWN, SOUTH AFRICA.

By Edward Miller & Co.—2 packages Lamp Goods.

By R. W. Forbes & Son.—3 packages Hardware, 5 cases Carriage Hardware, 20 dozen Axes, 5 crates Refrigerators, 1 case Corn Mills, 1 case Bits, 80 dozen Axe Handles, 1 case Hardware, 2 gross Axle Grease.

By W. H. Crossman & Bro.—1 dozen Carts, 1 dozen Agricultural Implements, 8700 pounds Sash Weights, 1 bale Sash Cord.

By Coombs, Crosby & Eddy.—2 Store Trucks, 2 Hand Carts, 1 Spring Wagon, 12½ gross Axle Grease, ½ dozen Meat Cutters, 1 dozen Churns, ¾ dozen Hay Cutters, 1 dozen Wheelbarrows, 14 dozen Edge Tools, 1 Lathe, 24 dozen Hardware, 4 dozen Bench Screws, 6 dozen Planes, 1 dozen Hand Screws, ½ dozen Meat Choppers, 1 dozen Axes, 6 dozen Rat Traps, 9 dozen Carpenters' Tools, 2 dozen Ladders, 5 dozen Edge Tools, 1½ dozen Meat Cutters, 18 dozen Edge Tools, 3 dozen Planes, 1 dozen Grindstone Fixtures, 3 dozen Hand Screws, 2 dozen Saws, 1 dozen Wood Rakes, 9 Door Clamps, 1 dozen Blocks, 7 dozen Hardware, 2 Chucks, 1 dozen Axes.

REVIEW OF THE WHOLESALE MARKET IN PAINTS AND OILS.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Paints and Colors.

The past week has witnessed but few and no really important changes in either the Paint or the Oil trades. In point of fact, nothing out of the commonplace has transpired, aside from the sale of a large quantity of Crude Cotton Seed Oil by the Southern Oil Company to the American Cotton Oil Company, which transfer, it is believed, leaves the latter concern in practical control until new Oil shall begin to come upon the market. The National Lead Trust has made no new move calculated to change the situation as far as the leading pigment may be concerned, and the rumors that have prevailed latterly regarding irregular prices for Linseed Oil in other quarters fail to have any reflection here, except in a weakish sort of feeling on outside brands. Spirits Turpentine keeps comparatively high despite a considerable addition to the supply at this point. In the present situation of affairs, it is of interest to note, the manufacturers of what are commonly termed cheap Paint, seem to be placed at a disadvantage. There is just enough uncertainty surrounding the principal ingredients to cause more than ordinary caution on the part of buyers, yet Dry White Lead is nearly as costly as it was six months ago. Zinc is no cheaper, nor is Linseed Oil, and Turpentine comes several cents per gallon higher. At the same time Pure White Lead in Oil is put out by jobbers at about ¼¢ per pound below the prices generally adhered to prior to the change in list prices and terms made last month by the National Lead Trust. However, there may be some cause for gratification in the fact that present conditions favor the use of pure Lead to greater or less extent where inferior Pigment had gained a footing through desire for economy. As regards general trade little can be said that contrasts with the remarks in last week's reports. The distribution of Paints and Oils in general is fair all told, with no indications of any unusual movement in the near future or of much variation from current prices in any department.

White Lead.—Local corroders are not found to be deviating from the June list in the slightest degree, directly or indirectly. Jobbers adjust prices to suit circumstances, however, and the price their customers are required to pay depends a great deal upon what else may be bought than Lead. In other words, the chief pigment is sold almost exclusively as a "leader," and small quantities are sometimes put in at ¼¢ ₱ lb below the corroder's list price for 12-ton lots. The most popular brands are rarely billed at over 6¼¢ @ 6½¢, against 7¢ list price for 500-lb lots. Mixed Leads sell at all the way from 5½¢ down to 4¢, according to quality.

Red Lead and Litharge.—Prices have not varied, as far as manufacturers are concerned, and outside supplies are not sufficient to be a menace. Thus a fairly firm market obtains, although dealings are on a moderate scale.

Zincs.—The rather slow trade in cheap Paints is somewhat of a drawback to trade in American Oxide at first hands. Still the average amount of stock appears to be worked off and good qualities in ordinary sized lots bring old prices. Foreign brands are unchanged and selling rather slowly.

Colors.—Outside of the ordinary routine movement there is practically nothing doing at the present time, and the distribution in a jobbing way contrasts in no particular with what is customary at this period. Prices throughout stand practically the same as they have been for some time past.

Miscellaneous.—Block Chalk, ex-ship, or to arrive, is still quoted at $2 ₱ ton, but the demand is slow and the market is not firm at that price. Whiting is slow and rather weak, over 40¢ for common or 50¢ for gilders' being the exception on transactions involving wholesale quantities. Paris White, Barytes, Terra Alba and Talc are wholly unchanged.

Linseed Oil.—Western and outside State brands have been offered rather more urgently, but in moderate quantities only, and rarely, if at all, at less than 59¢. City brands are not affected in the slightest degree. Crushers make no concession whatever on price, at all events, and report a fairly good trade for the season.

Cotton Seed Oils.—The chief feature in this branch has been the sale of 5000 barrels or more of Crude Oil by the Southern Oil Company to the American Company. Apart from this transaction and sales of fair sized lots of "off" grade Crude and Summer Yellow there has been little movement. Supplies are now concentrated, but prices appear rather weak, as not unusual towards the end of the season.

Lard Oil.—There has been no change whatever in prices, nor any new feature calculated to affect values. The demand is merely of routine character, at all events, and the fluctuations in cost of raw material have been slight.

Fish Oils.—The position of crude Menhaden Oil is the same as noted last week, except that supplies have accumulated slightly. There is no change whatever on Sperm or Whale. The manufactured products are jobbing fairly at old prices.

Spirits Turpentine.—Spot supplies have increased to about 2500 bbls. Prices yielded slightly early in the week, but have since reached to 42½¢ @ 43¢, and the market shows more tone than it did a short time ago, when only one-third the amount of the present supply was on hand here.

Work will be commenced about September 1 on the new manufacturing plant of the Fraser & Chalmers Company, Chicago. The new works will extend over several acres and will be located at West Twelfth street and Washtenaw avenue. They will include a foundry, shafting and pattern shop, stock and shipping house, boiler and power house, engine and erecting shop, blacksmith shop, boiler shop, wood and punch shop, and an extensive office building. Architects Raeder, Coffin & Crocker are busily engaged in completing the plans and will have everything ready in a short time. They have finished the plans of the boiler shop and foundry. The boiler shop will be 400 x 133 feet on Twelfth street and Washtenaw avenue and one story high. The foundry will be two and four stories high, 535 x 150 feet, of brick, stone and iron, with slate and copper roofs. Each of these buildings will be completely equipped with the most modern and improved machinery. This new factory will be among the largest of the kind in the world and will employ nearly 3000 men. It will cost considerably in excess of $1,000,000. Fraser & Chalmers have branch offices in London, New York, Denver, Salt Lake City and Chihuahua, Mexico.

The cupola of Cassidy & Adler, in West Fifty-fifty street, in this city, exploded on Saturday and 16 workmen were injured, one of them fatally.

Brass Tackle Blocks.

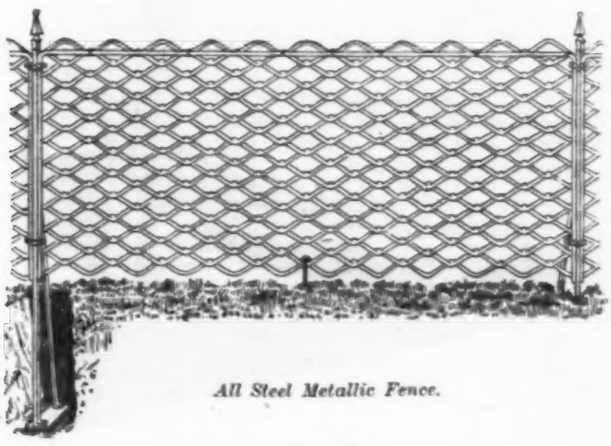
Walter Coleman & Sons, Providence, R. I., are introducing Brass Tackle Blocks for yachts, as illustrated herewith. These are described as differing from ordinary tackle blocks in that the pin is fastened to the sheave and revolves in the shell in the

Brass Tackle Blocks for Yachts.

bearings. We are advised that the shell, sheave and pin are brass, intended to prevent rust. The edges of the shell are rounded, preventing undue wear of rope. The point is also made that these blocks are easy running and durable, especially adapted to main sheets of sail yachts. They are furnished with side hooks, front hooks, sister hooks, deck attachments and shackles. The hooks in brass tackle blocks are galvanized wrought iron.

All Steel Metallic Fence.

Central Expanded Metal Company, Pittsburgh, Pa., are manufacturing the fencing shown in the illustration given herewith, which is designated by them as their new "B" fence. In the construction of the fencing the sheet of expanded



All Steel Metallic Fence.

metal is framed at the top and ends with 7-16 round steel, leaving one mesh projecting on the top which forms a line of pickets. The post is a bar of 1 inch x ¼ inch steel, with brace rod and base plate of steel, as shown. The panels are attached to the posts by strong clamps securely bolted together. It is stated that a screw driver is the only tool required to erect the fencing after posts are placed. Among other features of this style of fence construction mentioned by the manufacturers are the facility of locating corner and gate posts at any point, of making any angle at corner, of starting off division fences from any post on the main line at any angle, its conformity to any curve, and the fact that it sustains itself satifactorily in these curved positions. The fence throughout is well coated with metallic paint, the post bases being treated with the best asphalt. The fence is described as made of soft, tough steel, and the claim is made that it is stronger and more durable than any other fence of equal weight in the market. The neatness and simplicity of design and its inexpensiveness are also referred to. Gates are made standard widths in hight and style to correspond with this design of fencing.

The Bailey Auger Bit.

The Bailey Auger Bit Company, of Lancaster, Ohio, are putting on the market, under the above caption, a new form of Auger Bit to which they refer, calling attention to the fact that there being but one spiral the space usually occupied by the second spiral provides for an easier passage of the chips and a greatly improved clearance, and is free from obstruction, as there is no center stem over which the chips must pass. The thickness of the spiral is described as so graduated from the outer to the inner edge that the heavier part of the spiral is out of the way of the chips and permits of the bit being made of almost any desired strength. It is stated that these bits are made only of the very best crucible cast steel, giving superior strength and temper. Reference is also made to the fact that the bit bores easily and has superior cutting qualities, a point on which numerous testimonials are cited.

The Bailey Auger Bit.

The Rapid Cork Puller.

In the accompanying illustration we represent this article, which is manufactured by the Meriden Malleable Iron Company, Meriden, Conn. In pulling a cork with this device the point is made that the strain is on the strongest part of the bottle and that the bottle cannot be broken. One motion of the hand will extract the cork and cut the wires about it. The simplicity and cheapness, as well the rapidity of operation, of this puller are points also made in regard to it. The manner in which the puller is operated will be inferred from the following directions, which are given for its use :

Place the cork of the bottle directly against the under part of the body of the puller, hold-

The Rapid Cork Puller.

ing the bottle with the left hand ; then press down the lever or handle with the right hand until the lever hangs straight with the body of the puller. This cuts the wires and removes the cork from the bottle. Then throw back the lever and the cork will drop from the screw.

It is stated that the pullers are so made that any part can be replaced without returning the entire machine to the factory.

Gas Pipe Strap.

In the accompanying illustration we present a view of a new gas pipe strap which has just been placed upon the market by Berger Brothers, Manufacturers of Tinners Hardware, at No. 223 Arch street, Philadelphia, Pa., The object of this new device is to render the work in connection with which it is employed more neat and attractive than would be the case if a strap of plainer finish was used. This strap is galvanized and highly polished, and is provided with an oval flange which adds materially to its general appearance. The manufacturers state that they can be supplied so low that the trade can adopt them without any increased cost. It is made in all sizes from ⅛ of an inch up to 2 inches. Although this strap has been upon the market for but a comparitively short time it has met with great favor at the hands of the trade, the manufacturers feeling that eventually it will supersede all others, and that no plumber desirous of keeping abreast of the times can afford to be without it In the engraving which we present herewith the strap is shown in connection with a short joint of pipe.

Gas Pipe Strap.

Owens' Patent Wood Door Knobs.

Surpless, Dunn & Alder, 97 Chambers street, New York, are offering to the trade these door knobs, the construction of which is indicated in the cuts herewith given. The method of attaching the wood knob to the shank does away entirely with the use of glue, cement or lead, and the point is made that knobs fastened in that way nearly always work loose. In the knob shown the shank is described as securely keyed into the knob, making it impossible for it to become loose through ordinary use or shaking. By a reference to the engravings it will be observed that the shank *d* is cast with two lugs, *cc*, one on each side, which when being inserted in the knobs A and B pass through recesses cut out for them. When the shank *d* has been pressed down to the bottom of the cavity in knobs, A and B, the lugs *cc* will enter the circumferential groove shown in Fig. 1. The shank *d* is then rotated until the grooves in the knob and shank coming together will form a round hole into which are inserted the locking keys *bb*, shown in Fig. 2, thus fastening the knob securely to the shank. These knobs are claimed to be as strong and durable as metal knobs, their finish being especially emphasized.

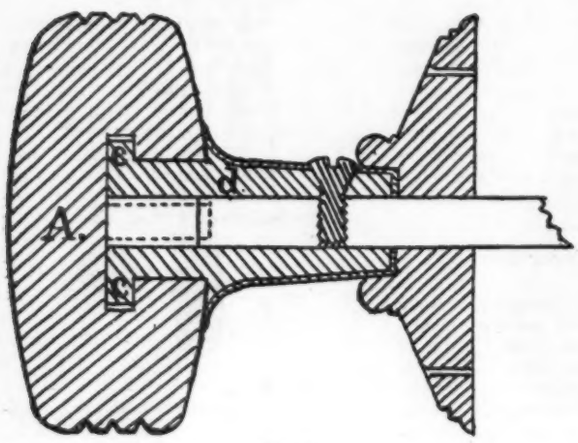


Fig. 1.

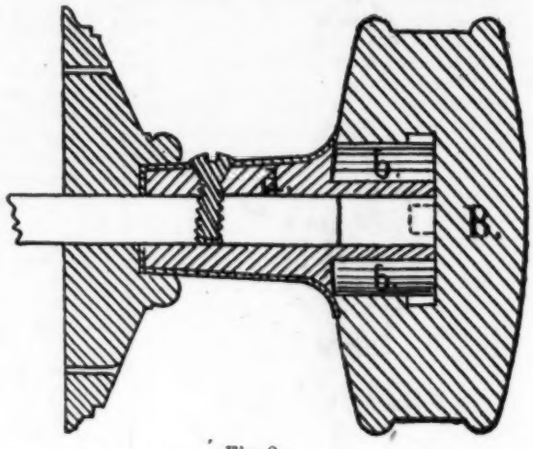
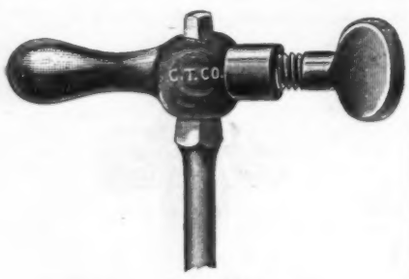


Fig. 2.

Sectional View of Owens' Patent Wood Door Knobs.

Adjustable Bit Wrench.

In the illustration herewith given we represent this article, which is manufactured by the Cincinnati Tool Company, Cincinnati, Ohio. The cut represents the wrench one-half size. It is stated by the manufacturers that by means of the V tread malleable thumb screw this bit wrench will fit any bit brace shank, and hold it perfectly rigid. The goods are described as well finished, and packed one dozen in a box.



Adjustable Bit Wrench.

Another ocean steamer claims the proud distinction of having reduced the Transatlantic record under the six-day limit. It is the Teutonic, of the White Star line. She arrived, 16th inst., after a wonderfully quick trip, and her record now stands next to that fleet of the Inman liner, City of Paris. According to Captain Irving's official log the Teutonic made the run from Roche's Point to Sandy Hook in 5 days, 21 hours and 55 minutes. The best time on record, that of the City of Paris, made in August, 1889, is 5 days, 19 hours and 18 minutes, which is 2 hours and 37 minutes better than that of the Teutonic; but the Teutonic traveled 50 miles more than the Inuan liner did when she made her famous trip.

Floor Clamp.

The Cincinnati Tool Company, Cincinnati, Ohio, are manufacturing the floor clamp herewith illustrated, the cut being one-sixth size. The construction of the tool will be clearly apprehended from the engraving. It is described as made of malleable iron, with a nicely finished wood handle and steel dog. It is pointed out that by the use of this clamp a tight joint is made, the tongue not being marred, and one man can easily clamp and nail at the same time. The weight of the floor clamp is 3½ pounds.

Floor Clamp.

The encroachment of Canadian railway lines upon competing roads on American soil becomes more threatening, as from time to time they are enabled to complete their terminal connections in Chicago, Detroit and Buffalo, thus doing their transportation business without the restrictions of the Interstate Commerce law. The resolution offered by Senator Cullom, intended for the protection of American lines, directs the Secretary of the Treasury to inform the Senate upon what authority merchandise in bond, appraised or unappraised, and goods of domestic origin, are permitted to be forwarded between Atlantic and Pacific ports of the United States over the Canadian Pacific Railway, said merchandise on arrival at Vancouver, British Columbia, being there transhipped to vessels or cars, as the case may be, and whether or not such transportation and transhipment on foreign territory is consistent with the safety of the revenue and the laws governing the coasting trade of the United States. He is also instructed to report by what authority merchandise other than the products of contiguous countries, is permitted to enter the United States under consular seal, and proceed to destination without entry or examination at the port of first arrival.

Pluche Patent Adjustable Bench Pin.

J. F. Pluche & Co., Watertown, N. Y., are manufacturing the above article, which is represented in the accompanying engravings, Fig. 1 affording a view of the article itself and Fig. 2 illustrating its use. This bench pin is intended to take the place of the old-fashioned wooden pin used by carpenters and cabinet makers, which is inserted in a hole bored in the side of the bench at suitable hight. The manufacturers of the device represented herewith refer to the inconvenience and trouble attending the use of the wooden

Fig. 1.—Pluche Patent Adjustable Bench Pin.

pin, making the point that it was in the way if not removed, and if removed was easily lost. The Pluche bench pin consists, it will be observed from Fig. 1, of a threaded bolt, which is 18 inches long and ¾ inch in diameter, having an iron plate at bottom, and an adjustable pin, by raising the end of which the pin may be moved up or down the threaded bolt to any point desired, where it is firmly and securely locked in place. When not in use the projecting pin swings under the bench and is thus out of the way. The contrivance can be placed in a slide, as

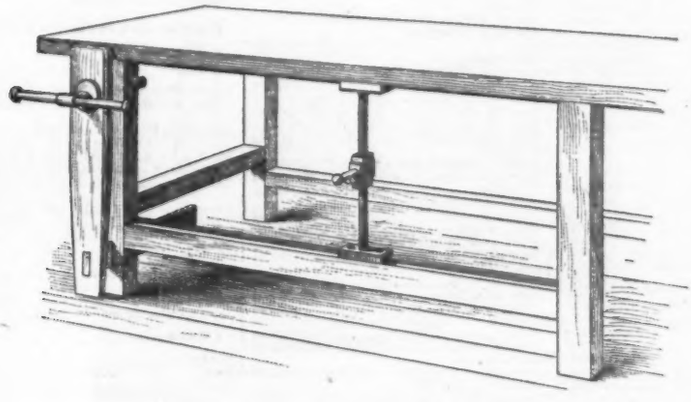


Fig. 2.—Applied to Bench.

shown in Fig. 2, and moved any distance from the vise, thus making the pin adjustable to any position. The fact that the pin is always ready for work is another point to which attention is called by the manufacturers.

Referring to the continued waste of the timber resources of the United States and the failure of the Timber Culture act, as acknowledged by the Agricultural Department, experts who have examined the subject, derive satisfaction from the gradual extension of the wooded areas occupied by farmers in many of the States East and West.

Perfection Sprinkler.

Deverall Perfection Company, 1 Adams street, Brooklyn, N. Y., are manufacturing the sprinkler represented in the

Fig. 1.—Perfection Sprinkler.—Straight Neck.

accompanying illustrations, Figs. 1 and 2. One of the special features of this sprinkler is the refilling valve by means of

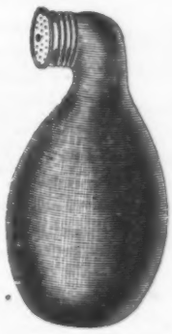


Fig. 2.—Angle Neck.

which the sprinkler is replenished. The construction of this valve is such that it insures the satisfactory filling of the sprinkler, while preventing the water from being discharged through it, the valve being also relieved from all side pressures. The valve when worn can be taken out and replaced by another. By the use of this sprinkler the spray may be forced in any direction and the metal spraying head may be entirely removed from the bulb, thus furnishing a large opening for cleaning out. The illustrations represent the two styles in which the sprinkler is furnished, straight necked and angle necked. The sprinkler is supplied with or without valve, as desired.

The fair to be held in Boston in October and November next, the Seventeenth Triennial Exhibition of the Massachusetts Charitable Mechanics' Association, promises to maintain the standard held by the society; and, indeed, it is believed that in many respects the coming fair will surpass any previously held. The entries of machinery already made show that this most important branch of the exhibition will be large and comprehensive. The managers are now busily engaged in assigning space, having delayed this work as long as possible, in order to secure a systematic arrangement of the various classes.

The Chicago, Burlington and Quincy Railroad Company has completed the details for the erection of a modern double track railroad bridge over the Mississippi at Burlington, to take the place of the old structure.

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CURRENT HARDWARE PRICES.

JULY 23, 1890.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.

Domestic.....₱ doz $3.00, 33⅓%
Excelsior.....₱ doz $10.00.....50&10&2%
Washburn's Self-Locking.....20@20@10%

Ammunition.—

Caps, Percussion, ᵔ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....34@35¢
E. B. Trimmed Edge, 1-10's.....46@48¢
E. B. Grud. Edge, Cent. Fire, 1-10's.....46@47¢
Musket Waterproof, 1-10's.....50¢
G. D.....28¢
S. B. Genuine Imported.....45¢
Eley's E. B.....54¢ @ 55¢
Eley's D Waterproof, Central Fire...$1.60

Cartridges—
Rim Fire Cartridges.....50&5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting 15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Primers—
Berdan Primers, $1.00.....2%
B. L. Caps (for Sturtevant Shells) $1.00, 2%
All other Primers, $1.20.....2%

Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Prize.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
I X L, 10 and 12 guage.....40&5&2%
"Special," 16 gauge.....30&10&2%
"Special," 10 and 12 gauge.....40&10&2%
Fowler's Pat.....$3.25
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%

Shells Loaded—
Standard List, July 19, 1890..40&10&5%

Wads—Price per M.
U.M.C.&W. R. A.—B. E., 11 up... 68¢
U.M.C.&W. R. A.—B. E., 9&10... 82¢
U.M.C.&W.R.A.—B. E., 8..... 96¢
U.M.C.&W.R.A.—B. E., 7.....$1.10
U.M.C.&W. R. A.—P. E., 11 up.. 1.15
U.M.C.&W.R.A.—P. E., 9&10.. 1.50
U.M.C.&W. R. A.—P. E., 8..... 1.70
U.M.C.&W.R.A.—P. E., 7..... 1.80
Dis.20&2
Eley's B. E., 11 up.....$1.75
Eley's P. E., 11@20..... 2.80

Anvils.—

Eagle Anvils, ₱ ᵬ 10¢.....15@15&5%
Peter Wright's..... 10½¢
Armitage's Mouse Hole.....9½¢
Armitage's Mouse Hole, Extra.11½@11¾¢
Trenton.....9½@10¢
Wilkinson's.....9¾@10¢
J. & Riley Carr, Pat. Solid.....11@11½¢
Moore & Barnes Mfg. Co..... 33⅓%

Anvil Vise and Drill—
Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%
Star.....45&5%

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.
Rockford Bit Company.
Cook's, Douglass Mfg. Co.
70@70&10%
Cook's, N. H. Copper Co.50&10@50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₱ set, 32½ quarters, No. 5, $5; No. 30, $3.50.20%
Lewis' Patent Single Twist.....45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60@60&5%
Snell's Jennings Pattern.....60%
Pugh's Black.....20%
Rockford, Jenning's Pattern.....60%
Car Bits.....60@60&10%
Car Bits, P. S. & W. Co.....60&10%
Snell's Car Bits.....60%
L. Hommodieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....10%
Cincinnati Bell-Hangers' Bits.....30&10%

Bit Stock Drills—
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood..40&10%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—
Clarks' small, $18; large, $26...35@35&5%
Ives' No. 4, ₱ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—
Common.....₱ gross $2.75@$3.25
Diamond.....₱ doz $1.10.....25&10%
Bee.....25@25&5%
Double Cut Shepardson's..45@45&10%
Double Cut, Ct. Valley Mfg. Co...30&10%
Double Cut, Hartwell's, ₱ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%

Hollow Augers—
Ives
French, Swift & Co.
Douglass'
33⅓ @ 33⅓&10%
Bonney's Adjustable, ₱ doz $48....40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c—

Awls, Sewing, Common ₱ gr $1.70, 35%
Awls, Should. Peg, ₱ gr $2.45, 40@40&10%
Awls, Pat. Peg...₱ gr 63¢ ... 40@40&10%
Awls, Shouldered Brad..2.70 ₱ gr.....35%
Awls, Handled Brad...$7.50 ₱ gr.....45%
Awls, Handled Scratch ₱ gr, $7.50.35&10%
Awls, Socket Scratch, ₱ doz, $1.50.25@30%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality	$8.00	$8.50
Others	7.50	8.0

Note.—Jobbers often sell at lower prices than the above.

Axle Grease—See Grease, Axle.

Axles—

No. 1, 4¼¢@5¢, No. 2 5½¢@6¼¢ } 3% cash
Nos. 7 to 14.....55&5%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
Concord Axles, loose collar.....5¢@6¢
Concord Axles, solid collar.....6¢@7¢
National Tubular Self-Oiling..... 33⅓%@33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—

Spring Balances.....40%

No.	2000	20	30
Chatillon, ₱ doz.....	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Bars.

Crow—
Cast Steel.....₱ ᵬ 4¼¢
Iron, Steel Points.....₱ ᵬ 3¾¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82...50&10@ 50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters, Egg, &c—

Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....20%
Dover.....₱ doz $1.50
Duplex (Standard Co.).....₱ doz $1.25
Rival (Standard Co.).....₱ doz $1.00
Duplex Extra Heavy (Standard Co.)..... ₱ doz $3.50
Bryant's.....₱ gro $14.00
Double (H. & R. Mfg. Co).....₱ gro $16.20
Easy (H. & R. Mfg. Co.).....₱ gro $14.00
Triple (H. & R. Mfg. Co.).....₱ gro $16.20
Spiral (H. & R. Mfg. Co.).....₱ gro $4.50
Paine, Diehl & Co.'s.....₱ gro $24.00

Bells—

Cow—
Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Dodge, Genuine Kentucky....70@70&10%
Texas Star.....50&10@50&10&5%
Call.....40@40&5%
Farm Bells.....₱ ᵬ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Door—
Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Pull, Western.....25&10%

Electric,
Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%

Hand—
Light Brass.....75&10%
Extra Heavy.....65&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe(Cone's Patent).....25&10@35%

Bellows—

Blacksmiths'.....60&5@65%
Molders'.....40@40&10%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70%
Standard.....60&10&10@70%
Extra.....50&10@60%
N.Y.B.&P.Co., Carbon...50&5@50&10&5%
N.Y.B.&P.Co., Diamond....40&5@40&10%

Bench Stops—See Stops, Bench.

Benders, Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Ordinary Tackle, list May 20, 1889... 50&10@60%
Cleveland Block Co., Mal. Iron.....50%
Moore's Novelty, Mal. Iron.....50%

Boards, Stove.

Wood Lined "Crystal".....50%
"Embossed".....50%
"Oxidized".....45%
Paper Lined Zinc.....55%
"Crystal".....55%
"Embossed".....55%
"Oxidized".....45%

Bolts—

Carriage, Machine, &c.—
Com. list June 10, '84.....70&10&7½&2%
Genuine Eagle, list Oct., '84...75&10@80%
Phila. pattern, list Oct. 7, '84..80@80&10%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890..... 75&10@75&10&5%
Bolt Ends, list Jan. 1, 1890..... 75&10@75&10&5%

Door and Shutter—
Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..60&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list...55&10%
Wr't Sunk Flush, Stanley's list...50&10%
Wr't B.K.Flush. Com'n " ...55&10%

Stove and Plow—
Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%

Tire—
Common, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83.....65%
Keystone, Philadel., list Oct. '84..80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R.B.&W., Philadel., list Oct. 16, '84....80%

Borers, Tap.

Common and Rind.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10&30%
Clark's.....33⅓@35%

Borax.....₱ ᵬ 9¼@10¼¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.

Per ᵬ.....2¾¢

Braces.—

American Bit Brace Co.:
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5%
Ball Braces, net.....$1.12 to $1.25¢
Amidon's
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber's,
Nos. 10 to 16.....50%
Nos. 30 to 33.....50%
Nos. 40 to 63.....50&10%
Barker's,
Nos. 8, 10 and 12.....75&10@80%
Plated, Nos. 8, 10 and 12....65&10@70%
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's..50&5&50&10%
Fray's No. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%
P. S. & W. Co., Peck's Patent.....60%

Brackets—

Shelf plain, Sargent's list, 55&10@55& 10&10%
Shelf, fancy, Sargent s list, 60&10@60 &10&10%

Reading, plain.....50&10@60&10&5%
Reading, Rosette.....60&10@60&10&10%

Bright Wire Goods—See Wire.

Broilers—

Henis' Self-Basting. { Inch..... 9 10 9x11
Per doz...$4.50 & 50 6.50
New Haven.....50%

Buckets, Well.

Galvanized—
Hill's.....₱ doz, 12 qt, $4.25; 14 qt, $5.25
Iron Clad.....₱ doz, 14 qt, $4.25@$4.50
Whiting's Flat Iron Band.....$4.25@4.50
Whiting's Wired Top..₱ doz $4.00@.4.25

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers Butchers'.

Butts—

Brass—
Wrought Brass.....75&10@80%
Cast Brass, Tiebout's'.....50%
Cast Brass, Corbin's, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—
Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.
Loose Joint, Japanned.
Loose Joint, Jap. with Acorns.
Parliament Butts.
Mayer's Hinges.
Loose Pin, Acorns.
Loose Piu, Acorns, Japanned.
Loose Pin, Acorns, Japanned, Plated Tips.
.70&5@ 70&10%

Wrought Steel—
Fast Joint, Narrow.
Fast Joint, Lt. Narrow.
Fast Joint, Broad.
Loose Joint, Broad.
Table Butts, Back Flaps, &c.
Inside Blind, Regular.
Inside Blind, Light.
Loose Pin.
.70&5@ 70&10%
Bronzed Wrought Butts.....50

Calipers—See Compasses.

Calks, Toe—

Gautier.....₱ ᵬ 5½¢@6¢
Dewicks (Burke).....₱ ᵬ 5½¢@6¢

Can Openers—See Openers, Can.

Cards—

Horse & Curry.....10&10&10&10%
Cotton.....10&10&10%
Wool.....10&10&10%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sweepers Carpet.

Cartridges—See Ammunition.

Casters—

Bed..... Brass....55@55&10%
Plate..... Others...60@60&10%
Shallow Socket....
Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10@40%
Yale, Gem.....60@60&5%
Martin's Patent (Phœnix).....45&10@50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

Cattle Leaders—See Leaders, Cattle.

Chain—

Trace, Wagon and Fancy Chains, List revised April 21, 1890.....50& 10@60%

American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$8.00	5.70	4.80	4.30	3.90	3.75	3.65	3.55

Less than cask lots, add ¼@¼¢ ₱ ᵬ.
German Coil, list of June 20, 1887 50&10&5@60%
German Halter Chain, list of June 20, 1887.....50&10&5@60%
Covert Halter.....60&2%
Covert Traces.....35@3%
Covert Heel Chain.....50&2%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₱ ᵬ 5½¢@6¢
Jack Chain, Iron.....75&10@80%
Jack Chain, Brass.....75@75&10%

Chalk—

White.....₱ gr 50¢
Red.....₱ gr 70¢
Blue.....₱ gr 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—

Socket Framing and Firmer.
P. S. & W.
New Haven.
Witherby.
Mix.
Ohio Tool Co.
..75 @ 75&10
Douglass.....75@75&5%
Buck Bros.....30%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%

Tanged and Miscellaneous.
Tanged Firmers.....40&10@50%
Butchers'.....$4.75@5.00
Spear & Jackson's.....$5 to &
Buck Bros.....30%
Cold Chisels, ₱.....15@1 %

Chucks—

Beach Pat.....each, $8.00.....20%
Morse's Adjustable,each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Bals Pat.....25%
Skinner's Patent Chucks.
Combination Lathe Chucks.....33⅓&%
Universal Lathe Chucks.....40%
Independent Lathe Chucks.....40%
Drill Chucks.....15%
Union Mfg. Co.,
Victor.....$8.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Churns.

Tiffin Union No. 1, 5 gallon...$3.25 each
Tiffin Union No. 2, 7 gallon...$3.75 each
Tiffin Union No. 3, 10 gallon...$4.25 each

Clamps—

B. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5&10&10%
Warner's.....40&10&40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....25&10%

Cleavers.

Butchers'.

Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—

Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips.....66⅔&5&70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₩ ℔, 5½¢
Steel Felloe Clips.....₩ ℔, 5¢
Baker Axle Clips.....55%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.

Hardware list.....50&2%

Coffee Mills—See Mills, Coffee.

Collars, Dog, &c.

Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company....50&10@60%

Combs, Curry.

Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....20%
Perfect.....50%

Compasses, Dividers, &c.—

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See Tools, Coopers'.

Cord, Sash—

Common.....₩ ℔ 10@11¢
Patent, good quality.....₩ ℔ 13@13½¢
White Cotton Braided, fair...₩ ℔ 28@29¢
Common Russia Sash.....₩ ℔ 13½¢
Patent " " .....₩ ℔ 15¢
Cable Laid Italian Sash.....₩ ℔ 22@23¢
Indian Cable Laid " .....₩ ℔ 15¢
Silver Lake—
A Quality, White, 50¢.....10&10&5%
A Quality, Drab, 55¢.....10&10&5%
B Quality, White, 50¢.....28@30%
B Quality, Drab, 55¢.....31@33%
C Quality, White (only).....26½@28¢
Sylvan Spring, Extra Braided, White, 34¢
Sylvan Spring, Extra Braided, Drab..39¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Samson—
Braided, White Cotton, 50¢...30@30&5%
Braided, Drab Cotton, 55¢....30@30&5%
Braided, Italian Hemp, 55¢...30@30&5%
Braided, Linen, 80¢.....30@30&5%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₩ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—

Grain.....50&5&2@50&10&2%

Crayons.

White Crayons, ₩ gr, 12¢@12½¢.....10%
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr, $2.50.....25%
M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain.

Cutters—

Meat.

Dixon's ₩ doz.....40&5%
Nos.... 1 2 3 4
$14.00 $17.00 $19.00 $20.00
Woodruff's ₩ doz.....40&5%
Nos.... 100 150
$15.00 $18.00
Hales Pattern ₩ doz.....70@70&5%
Nos.... 11 12 13
$27.00 $33.00 $45.00
American.....30%
Nos..... 1 2 3 4 B 5
Each.....$5 $7 $10 $25 $50 $60
Enterprise.....30%
Nos.....10 12 23 32 42
Each.....$2 $2.50 $4 $6 $11
Great American Meat Cutter.....30%
Nos 112 116 118 120 122
Each....$2.00 $2.75 $3.00 $2.50 $4 00
Miles' Challenge ₩ doz.....45@45&10%
Nos..... 1 2 3
$22.00 $30.00 $40.00
Home No. 1.....₩ doz, $26.00, 55&10%
Draw Cut, each:
Nos..5 2 6 8
$50 $75 $80 $225.....20@25%
Great American.....30%
Beef Shavers (Enterprise).....20&10@30%
Little Giant.....50%
Chadborn's Smoked Beef Cutter, ₩ doz $55.00

Tobacco.

Champion.....20&10@30%
Wood Bottom.....₩ doz $5.00@$5.25
All Iron.....₩ doz $4.25
Nashua Lock Co.'s..₩ doz, $18.00 50@55%
Wilson's.....55%
Sargents's.....₩ doz, $24, 55&10%
Acme.....₩ doz $20.00, 40%

Washer.

Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's.₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Cutlery—

Beaver Falls & Booth's.....33⅓
Wostenholme.....$7.75 to $

Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c —

Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.....₩ doz $16.00@17.00
Leed's.....₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant.....₩ doz. $18.00
Kohler's Hercules.....₩ doz. 15.00
Kohler' New Champion.....₩ doz. $9.00
Schnledler.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ doz $60.00, 50&5@50&10%
Gibbs Post Hole Digger, ₩ doz $30.00, 50%
Imperial, ₩ doz $15.....45%

Dividers—

See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.

Money, ₩ doz.....$18&$20

Drawing Knives — See Knives, Drawing.

Drills and Drill Stocks—

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's....each $2 50, 25&10&40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....30@20&5
Ratchet, Whitney's.....20&10%
Ratchet, Weston's.....20@25%
Ratchet, Moore's Triple Action...25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85

Twist Drills—

Morse.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans See Pans, Dripping.

Drivers, Screw.

Douglas Mfg. Co.....20@20&10%
Disston's.....60%
Buck Bros.....30%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 40.....60%&10&10%
P. S. & W.....70%
Knapp & Cowles No.1.....60&20&70%
No. 1 Extra.....60@60&10
Nos. 00 & 4.....50&5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Eilrich's Socket and Ratchet..25@25&.01
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ doz $6.00,25&10%
Syracuse Screw-Driver Bits....30&30&5%
Screw-Driver Bits.....₩ doz. 50&75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 3. $14.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits.....$

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery. — No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F. FF.
Kegs, ₩ ℔	4½¢	5 ¢	2½¢
½ kegs, ₩ ℔	4¾¢	5½¢	2¾¢
¼ kegs, ₩ ℔	5 ¢	5½¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6½¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.

Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Expanded Metal.

List No. 5.

Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Fasteners, Blind—

Mackrell's, ₩ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Washburn's Old Pattern, ₩ gr.....$9.00
Merriman's.....new list
Austin & Eddy No. 2008 ₩ gr.....$9.00
Security Gravity, ₩ gr.....$9.00

Faucets.—

Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ doz $50.00.....20&10%
Lane's, ₩ 3oz $36.00.....25&10%
Victor, ₩ doz $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—

Derby and Cincinnati.....45&5%
Brewster.....50&5%

Files—

Domestic—

Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75%
(extra prices on certain sizes)
Other makers, best brands.....60&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Nicholson's Horse Rasps....60&10@60&10&5%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut..50&10%

Imported—

Moss & Gamble....List, April 1, 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

Fixtures.

Grindstone—

Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors — See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—

Hay, Manure, &c., Asso List.....70%
Hay, Manure, &c., Phila. List 60@60&5%
Plated, see Spoons.

Frames—

Saw—

White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ doz $1.50, 25%

Screen, Window and Door—

Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons..33⅓@33⅓&10%
Stearns' Frames and Corners..25@25&10%

Freezers, Ice Cream—

White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic.....70@70&5%
American.....60%
Buffalo Champion.....65@65&5%
Shepard's Lightning.....65@65&5%
Gem.....65%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60
Peerless and Giant.....60&10
Zero and Pet.....65&10
Boss.....65&10&10
Keystone, P. D. & Co., each, $1.50.....20%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.

Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10 %; 2 to 5 gro., 20 %; 5 to 10 gro.....30 %
Copper, 1 to 6 doz., 15 %; 6 to 12 doz., 20 %; over 12 doz.....30 %

Fuse— ₩ 1000 ft

Common Hemp Fuse, for dry ground..$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground..
Double Taped Fuse, for very wet gr. 4.85
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gates, Molasses—

Stebbin's Pattern.....75&10@80%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....20%
Lincoln's Pattern.....70@70&10%
Weed's.....20&10%
Boss, ₩ doz:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....50@50&5%
Wire, Brown & Sharpe's.....10@30%
Wire, P. S. & W. Co.....

Gimlets—

Nail and Spike.....50&10&5%
" Eureka " Gimlets.....40&10%
" Diamond " Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
" Bee," ₩ gr $12.....25@25&5%

Glue—

Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Le Page & Co.'s Improved Process 25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.

Fraser's.....Keg ₩ ℔ 4¢, Pail ₩ ℔ 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in bxs..₩ doz 1 ℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting....10-℔ pails, ea. 35¢
Lower grades, special brands ₩ gr $5.50@$7.00

Grindstones—

Small, at factory.....₩ ton $7.50@9.00

Grindstone Fixtures—See Fixtures, Grindstone.

Hack Saws—See Saws.

Hafts, Awl.

Sewing, Brass Fer.₩ gr, $3.50.....45&10%
Pat. Sewing, Short.$1.00 ₩ doz.....40&10%
Pat. Sewing, Long.....₩ doz $1.20
Pat. Peg, Plain Top.₩ gr $10.00...45&10%
Pat. Peg, Leather Top.₩ gr $12.00.45&10%

Halters.

Covert's, Rope, ½-in. Jute.....50&2%
Covert's, Rope, ½-in. Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse and Cattle Ties, 60&10&2%
Covert's Adj. Web Halters.....35&2 %

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85..... 25&10@35%
Buffalo Hammer Co.
Humason & Beckley
Atha Tool Co.
Fayette R. Plumb. } 50@50&10%
C. Hammond & Son.
Hartford Hammer Co.
Verree.....
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%

Heavy Hammers and Sledges—

3 ℔ and under.....₩ ℔ 40¢ } 70@70&10%
3 to 5 ℔.....₩ ℔ 36¢ }
Over 5 ℔.....₩ ℔ 30¢ }
Wilkinson's Smiths.....10½¢@11¢₩ ℔

Handcuffs and Leg Irons—See Police Goods,

Handles—

Cross-Cut Saw Handles—

Atkins' No. 1 Loop, ₩ pair, 28¢; No. 3 18¢; No. 6, 16¢; No. 2 and No. 4 Reversible, 18¢.
Boynton's Loop Saw Handles, 50¢....60%
Champion.....15

Iron, Wrought or Cast—

Door or Thumb.

Nos.....	0	1	2	3	
Per doz....	$0.90	1.00	1.18	1.35	1.50

60&10&10%

Roggin's Latches.....₱ doz 30¢@35¢
Bronze Iron Drop Latches..₱ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88 ..... net
Barn Door, ₱ doz $1.40..... 10&10%
Chest and Lifting..... 70%

Wood—

Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₱ gr $2.00
Hickory Firmer Chisel, ass'd..₱ gr 4.50
Hickory Firmer Chisel, large..₱ gr 5.00
Apple Firmer Chisel, ass'd...₱ gr 5.00
Apple Firmer Chisel, large...₱ gr 6.00
Socket Firmer Chisel, ass'd...₱ gr 3.00
Socket Framing Chisel, ass'd..₱ gr 5.00
} 40@ 40&10%
J. S. Smith & Co.'s Pat File..... 50%
File, assorted..... ₱ gr ? 75
Auger, assorted.....₱ gr 5.00
Auger, large.....₱ gr 7.00
} 40@ 40&10%
Pat. Auger, Ives'..... 30&10%
Pat. Auger, Douglass..... ₱ set $1.2[illegible]
Pat. Auger, Swan's..... ₱ set $1.0[illegible]
Hoe, Rake, Shovel, &c..... 50&10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction..... 55%
Orleans Steel 55%
Hamilton Wrought Wood Track..... 55%
U. S. Wood Track 65%
Champion..... 60&10%
Rider and Wooster, Medina Mfg. Co.'s list..... 70%
Climax Anti-Friction..... 60%
Climax Anti-Friction for Wood Track 55%
Zenith for Wood Track..... 55%
Reed's Steel Arm..... 50%
Challenge, Barn Door..... 50%
Sterling's Imp'ved (Anti-Friction) 65&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00..... 50&2%
Cheritree..... 50&10%
Kidder's..... 50&10@60%
The Boss..... 60&10%
Best Anti-Friction..... 60&10%
Duplex (Wood Track)..... 60&10&5%
Terry's Pat., ₱ doz pr. 4 in, $10.00; 5 in. $12.00..... 50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered..... 50@5%
Wood Track Iron Clad, ₱ ft. 10¢..... 50 &15@60%
Carrier Steel Anti-Friction.....50@50&5%
Architect, ₱ set $6.00..... .20%
Eclipse..... 20&10%
Felix, ₱ set $4.50..... 20%
Richards'..... 30@30&10%
Lane's Standard..... 50&5@50&10%
Lane's New Standard..... 50@50&5%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat..... 20&10@20&10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless..... 40@40&5%
American, ₱ set $6.00..... 20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢..... 40%
Paragon, Nos. 1, 2 and 3 .....40&10%
Cincinnati..... 25&10%
Paragon, Nos. 5, 5½, 7 and 8.....20&10%
Crescent..... 60@60&10%
Nickel Cast Iron..... 50%
Nickel, Malleable Iron and Steel 40%
Scranton Anti-Friction Single Strap 33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00..... 45%
Star..... 40&10@40&10&5%
May ..... 50&5@50&10%
Barry, $6.00..... 40&10%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's.....
Hunt's.....
Hurd's.....
Mann's.....
Peck's.....
Underhill's.....
} 40 & 10 @ 50&5 %
Buffalo Hammer Co.....
Fayette R. Plumb.....
C. Hammond & Son.....
Kelly's.....
Sargent & Co.....
P., S. & W. Co.....
Ten Eyck Edge Tool Co.....
Collins..... 10%
Schulte, Lohoff & Co..... 50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker..... 75&2%
Palmer..... 50&5&10%
Seymour ..... 70&2%
Nicholson..... 45&10%
Huffer 50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity..... 50%
Sargent's, Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12..... 77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless..... 75&10%
Niagara..... 80%
Buffalo..... 80%
Clark's Genuine Pattern..... 80%
O. S., Lull & Porter..... 75&10%
Acme, Lull & Porter 75%
Queen City Reversible. ...70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1¼, 2, 2½, 3..... 75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50. ..... 10%

Gate Hinges—

Western..... ₱ doz $4.40, 60%
N. E..... ₱ doz $7.00, 55%
N. E. Reversible..... ₱ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3..... 60&10&5%
N. Y. State..... ₱ doz $5.00, 55&10%
Automatic..... ₱ doz $12.50, 50%
Common Sense..... ₱ doz pair $4.50, 50%
Seymour's..... 45&10%
Shepard's..... 60&10&5%
Reed's Latch and Hinges. ₱ doz $12.00, 50%

Spring Hinges—

Geer's Spring and Blank Butts..... 40%
Union Spring Hinge Co.'s list, March, 886 ..... 20%
Acme..... 30%
J. S. ..... 25&10%
Empire and Crown..... 20%
Hero and Monarch 55%
American, Gem, and Star..... 20%
Oxford..... 20%
Barker's Double Acting..... 25%
Union Mfg. Co..... 25%
Bommer's..... 30%
Suckman's..... 15@20%
Chicago..... 30%
Wiles'..... 10%
Devore's..... 40%
Rex..... 40%
Royal..... 60%
Reliable..... 60%
Champion..... 60%
Bardsley's Patent..... 40%
Stearn's..... 50&10%

Wrought Iron Hinges

Strap and T..... 75&10%
Screw Hook and Strap..... { 6 to 12 in., ₱ ₺ .4 2-10¢ / 14 to 20 in., ₱ ₺ .3 7-10¢ / 22 to 36 in., ₱ ₺ 3 2-10¢
Heavy Welded Hook..... { 6 to 12 in., ₱ ₺ .4 2-10¢ / 14 to 20 in., ₱ ₺ .3 7-10¢ / 22 to 36 in., ₱ ₺ 3 2-10¢
Screw Hook and Eye ..... { ⅛ in., ₱ doz $1.50 / ¼ in., ₱ doz $2.45 / ¾ in., ₱ doz $3.80 } 10%
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate..... 70&10%
Rolled Raised..... 70&10%
Plate Hinges "Providence" ..... { 8, 10 & 12 in., ₱ ₺ .....5¢ / over 12 in., ₱ ₺ .....4¢

Hoes—

Eye—

D. & H. Scovil..... 20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat..... 45&5%
Sandusky Tool Co., S. & O. Pat. } 50&10&5 @60%
Am. Axe and Tool Co., S. & O. Pat. }
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub..... 60&10%

Handled—

Garden, Mortar, &c..... 70%
Planter's, Cotton, &c..... 70%
Warren Hoe..... 60%
Magic..... ₱ doz $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₱ doz $18.....60%

Bit.

Extension,
Barber's, ₱ doz $15.00.....40@40&10%
Ives, ₱ doz $20.00.....60&5@60&10%
Diagonal..... ₱ doz $24.00, 40%
Angular..... ₱ doz $24.00, 40&5%

File and Tool—

Bals Pat.....₱ doz $4.00; 25%
Nicholson File Holders..... 20%
Dick's Tool Holder..... 20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list.....
Bird Cage, Reading.....
Clothes Line, Sargent's list.....
} 60&10&10%
Clothes Line, Reading list. 60&10@60&10&10%
Ceiling, Sargent's list..... 55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading .50&10@50&10&10%

Wrought Iron—

Cotton.....₱ doz $1.25
Cotton Pat. (N. Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)...50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886..... 50%
Wire Coat and Hat, Miles', list April, 1886..... 50%
Indestructible Coat and Hat..... 45%
Wire Coat and Hat, Standard..... 45%
Handy Hat and Coat..... 50&10%
Steady Ceiling Hooks..... 50&10%
Belt..... 80@80&10%
Atlas, Coat and Hat..... 60%

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₱ doz $2.25
Bush..... 55@60%
Whiffletree—Patent..... 55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass..... 60&10&10%
Fish Hooks, American..... 50%
Bench Hooks ..... See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition..... 75@75&5%
Standard..... 60&10&5@60&10&10%
Extra..... 50&10@60%
N. Y. B. & P. Co., Para..... 25&5%
N. Y. B. & P. Co., Extra..... 40@40&5%
N. Y. B. & P. Co., Dundee....50&10 @ 60%

Huskers—

Blair's Adjustable..... ₱ gr $8.00
Blair's Adjustable Clipper.....₱ gr 7.00
Hubbard's Solid Steel.....₱ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory....₱ 100 ₺, $2.30@$2.40
Self-Heating.....₱ doz $9.00 net
Self-Heating, Tailors'....₱ doz $18.00 net
Mrs. Pott's Irons..... 40@40&10%
Enterprise Star Irons..... 40@40&10%
Cold Handle Sad Irons..... 40&10@50%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons..... 25%
R. B. Sad Irons, ₱ ₺..... 3 @3½¢
Combined Fluter and Sad Iron, ₱ doz, $15.00..... 15%
Fox Reversible, Self-Fluter ₱ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England..... 6¢, 15%
Mahony's Troy Fol. Irons..... 25%
Sensible..... 20@20&5%
National Self-Heating..... 30 %

Soldering—

Soldering Coppers..... ₱ ₺ 22 @ 23¢
Covert's Adjustable, list Jan. 1, 1886. 35&2%

Irons, Pinking, per doz., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy..... 25%

Kettles—

	Spun.	Stamped.
Brass, 7 to 17 in., ₱ ₺....	24¢	22 ¢
Brass larger than 17 in., ₱ ₺	26¢	24½¢

Enameled and Tea—See Hollow-Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c..... 33⅓&2%
Hotchkiss' Brass Blanks..... 40%
Hotchkiss, Copper and Tinned..... 40%
Hotchkiss' Pad. and Cab..... 35%
Ratchet Bed Keys.....₱ doz $4.00, 15%
Wollensak Tinned..... 50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives.....25@30%
Ames' Butcher Knives..... 25%
Foster Bros.' Butcher, &c..... 40%
Nichols' Butcher Knives..... 40&10%
Ames' Shoe Knives..... 20@25%
Ames' Bread Knives. ₱ doz $1.50, 15@20%
Moran's Shoe and Bread..... 20%
Hay and Straw ..... See Hay Knives.
Table and Pocket..... See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn, Auburn Mfg. Co. Crescent....$3.50

Corn—

Bradley's..... 10%
Wadsworth's..... 25%

Drawing—

Witherby.....
P. S. & W .....
Mix .....
New Haven.....
} ..75@ 75&10 %
Merrill .....60&10@60&10&5%
Douglas..... 75@75&5%
Watrous..... 15&10@25%
L. & I. J. White..... 20&5%
Bradley's..... 35%
Adjustable Handle..... 25@33⅓%
Wilkinson's Folding..... 25@25&5%

Hay and Straw—

Lightning, Mfrs'. price ₱ doz $18.00, 25% But jobbers cut this price freely, often selling at $8 @ $8.50.
Wadsworth's.....40@7½@40&10%
Carter's Needle.....₱ doz $11.00@$11.50
Heath's.....₱ doz $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw..... 40%
Nolin's Hay .....₱ doz.$8.00 @ $9.00

Mincing.

Am. (2d quality), ₱ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18..... net
Lothrop's..... 20&10%
Smith's, ₱ doz, Single, $2.00; Double, $3 40&45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₱ doz $3.00 25%
Buffalo Double Adj'table. ₱ doz $3.00 25%

Knobs—

Door Mineral..... 60@65%
Door Por. Jap'd..... 70@75%
Door Por. Nickel..... $2.00@2.25
Door Por. Plated, Nickel..... $2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs..... 40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws..... 25&10%
Base, Rubber Tip..... 70&10&5%
Picture, Judd's..... 60&10&10@70%
Picture, Sargent's..... 70&10%
Picture, Hemacite..... 35&5%
Shutter, Porcelain..... 65&10%
Carriage, Jap..... ₱ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladles.—

Melting, Sargent's.....	55&10%
Melting, Reading.....	35&10%
Melting, Monroe's Pat...₱ doz $4.00,	40%
Melting, P. S. & W.....	35&10@40%
Melting, Warner's.....	30%

Lanterns—

Tubular—

Plain with Guards, ₱ doz.....$4.00@4.25
Lift Wire, with Guards.....$4.50@4.75
Square Plain, with Guards.....$4.00@4.25
Sq. Lift Wire, with Guards....$4.25@4.50
Without Guards, 25¢ ₱ doz less.

Miscellaneous.

Police, Small, $6.00; Medium, $7.25; Large, $9.75..... 20@25%

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason. Beckley & Co.'s..... 70%
Sargent's..... 66⅔&10%
Hotchkiss..... 30%
Peck, Stow & W. Co..... ...60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's:
Class 3 and 4, Bronzed Iron..... 50%
Class 3 and 4, Bronze Metal..... 25%
Class 3 and 4, Brass..... 35%
Skylight Lifters..... 35%
Crown, Eagle and Shield..... 50%
Reiher's, list Aug. 1, 1889-
Bronzed Iron Rods..... 50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior..... 50&10&2%
Shaw's..... 50&10%
Payson's Universal..... 40@40&10%

Lines—

Cotton and Linen Fish, Draper's..... 50%
Draper's Chalk..... 60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25..... 25%
Cotton Chalk..... 50%
Samson, Cotton, No. 4, $2; No. 4½, $2.50; No. 5, $3.00..... 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro..... 25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton..... 45%
Wire Clothes.. Nos. 12 10 20
100 ft. $4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₱ doz $7.50, 30%

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev Jan. 1, '85..33⅓&2%
Deitz, Nos. 36 to 39..... 40%
Deitz, Nos. 51 to 63..... 40&10%
Deitz, Nos. 86 to 96..... 30%
Stoddard Lock Co..... 30&33⅓%
"Champion" Night Latches..... 40%
Barnes Mfg. Co..... 40@40&10%
Eagle and Corbin Trunk..... 25&2%
"Champion" Cab. and Combin..... 33⅓%
Yale..... net prices
Romer's..... 25%

Door Locks, Latches, &c.

R. & E. Mfg. Co., list Mar. 20, 1889 } 60&10@60 &10&10
Mallory, Wheeler & Co., list July, '88 } Much lower net prices often made.
Sargent & Co., list Aug. 1, '88
Reading Hardware Co., list Feb. 2, '88,
Brittan, Graham & Mathes, list Jan. 1890..... 60&10&10%
Perkins' Burglar Proof..... 60&25%
Plate..... 33⅓&2%
Barnes Mfg. Co..... 40@40&10%
Yale..... net prices
Deitz Flat Key..... 30%
L. & C. Round Key Latches..... 50&10%
L. & C. Flat Key Latches..... 33⅓&10%
Romer's Night Latches..... 15%
Shepardson or U. S..... 35%
Seed's N. Y. Hasp Lock..... 25%

Padlocks—

List Dec. 23, '84..... 75@75&10%
Brittan, Graham & Mathes..... 75&10%
Yale Lock Mfg. Co.'s..... net prices
Eagle..... 25&2%
Eureka, Eagle Lock Co..... 40&2%
Romer's, Nos. 0 to 91..... 30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Deitz..... 40%
Champon Padlocks..... 40%
Hotchkiss..... 30%
Star..... 45%
Horseshoe.....₱ doz, $9. 40@40&10%
Barnes Mfg. Co..... 40@40&10%
Nock's..... 30%
Brown's Pat..... 25%
Scandinavian..... 90@90&10%
E. T. Fraim's Keystone Scandavian: Nos. 119, 120, 130 and 140..... 90&10% Other Nos..... 65%
Ames Sword Co. up to No. 150..... 40%
Ames Sword Co. above No. 150..... 50%
Slaymaker Barry & Co.
No. 41 line..... 45&5%
No. 31 line..... 60&5%
No. 21 line..... 75@5%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₱ gr.. 33⅓%
Ferguson's..... 33⅓%
Morris and Triumph, list Aug. 16, 1886, 60&2%
Victor..... 60&10&2%
Walker's..... 10%
Attwell Mfg. Co..... 25&33⅓%
Reading..... 66⅔&10@66⅔&10&10%
Hammond's Window Springs..... 40%
Common Sense, Jap'd, Cop'd and Br'zed.....₱ gr $4.00
Common Sense, Nickel Plated ₱ gr $10.00
Universal..... 30%
Kempshall's Gravity..... 60%
Kempshall's Model..... 60@60&10%
Corbin's Daisy, list Feb. 15, 1886..... 70%
Payson's Perfect..... 60@60&10%
Hugunin's Sash Balances..... 25&5&2%
Hugunin's New Sash Locks..... 25&5&2%
Stoddard "Practical"..... 10%
Ives' Patent..... 60&10@60&10&5%
Liesche's, Nos. 100 and 110, ₱ gr $8; 105, $10.00..... 20&10%
Davis, Bronze, Barnes Mfg. Co..... 50%
Champion Safety, list March 1, 1888 55@55&5%
Security..... 70%
Buckeye.....₱ gro $4.80

Lumber Tools—See Tools, Lumber

Lustro—

Four-ounce Bottles....₱ doz, $1.75; ₱ gross..... $17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas.....	$5.50	$6.75	.....	50%
Snell's, Ince's Pat.	5.50	6.75	..40&10&10	
Jennings	5.50	6.75...	45@45&10	
Other Machines...	2.35	2.75...	.....	
Phillips' Patent with Augers ...	7.00	7.50	.....	

Fluting.

Knox, 4½-inch Rolls .....$3.25 each } 35%
Knox, 6-inch Rolls..... $3.60 each }
Eagle, 3½-inch Roll, $2.15..... 35%
Eagle, 5½-inch Roll, $2.85..... 35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each 35%
Crown Jewel, 6 in .....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each..... 35%
Domestic Fluter ..... each, $1.50
Geneva Hand Fluter, White Metal ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00..... 30%
Shepard Hand Fluter, No. 85 ₱ doz $15 30 ..... 40%

Shepard Hand Fluter, No. 110 ₱ doz $11.00.....40%
Shepard Hand Fluter, No. 95 ₱ doz $6.00.....40%
Clark's Hand Fluter, ₱ doz $15.00.....35%
Combined Fluter and Sad Iron, ₱ doz $15.00.....30%
₱ doz $10.00.....10%
Buffalo .....

Hoisting—
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Differential Pulley Block.....40%
Energy Mfg. Co's.....25%

Mallets.

Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. .....30@30&10%

Mattocks. Regular list.....60&10%

Measures—

Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Mills.

Coffee—
Box and Side, List Jan. 1, 1888.....60&2%
American, Enterprise Mfg Co.20&10@30%
The Swift, Lane Bros.....20&10%

Mincing Knives — See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers — See Drawers, Money.

Mowers, Lawn.

Leading makers.....60@60&10&5%
Other makers.....60&10&5@60&10&10%
Pennsylvania.....60%
Continental.....60%
New Model.....60&10&5%
New Quaker City.....60&10&5%
Great American.....60&10&5%

Muzzles—

Safety.....₱ doz, $3.00, 25%

Nails.

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15,'89..75@75&5%
Tack M'frs.' list.....60&10&10%
Wire Nails, Standard Penny.
Card June 1, '89, base.....$2.50 @ $2.60

Horse—

Nos.	6	7	8	9	10
Ausable	.28¢	26¢	25¢	24¢	23¢.

25&10@25&10&10%

Clinton, Fin.....10½ @ 11¢, net
Essex .....28¢ 26¢ 25¢ 24¢ 23¢.
25&10@25&10&10%
Lyra .....25¢ 23¢ 22¢ 21¢ 20¢.
40&10&5@50%
Snowden . 25¢ 23¢ 22¢ 21¢ 20¢.
40&10&5@50%
Putnam.....23¢21¢ 20¢ 19¢ 18¢.
1000 ℔ in year 15%
Vulcan.....23¢ 21¢ 20¢ 19¢ 18¢..12½&5%
Northwest'n.25¢ 23¢ 22¢ 21¢ 20¢.
25@25&5%
Globe.....23¢ 21¢ 20¢ 19¢ 18¢..20&2½%
Boston.....23¢ 21¢ 20¢ 19¢ 18¢..20&2½%
A. C.....25¢ 23¢ 22¢ 21¢ 20¢.
25&10@33½&5%
C. B.-K.....25¢ 23¢ 22¢ 21¢ 20¢.
25&10@33½&5%
Champlain .28¢ 6¢ 25¢ 24¢ 23¢.
25&10¢&10%
New Haven..28 26¢ 25¢ 24¢ 23¢.
25&10@25&10&10%
Saranac.....23¢ 21¢ 20¢ 19¢ 18¢..30&10%
Champion ...25¢ 23¢ 22¢ 21¢ 20¢.
10&10&10%
Capewell.....28¢ 26¢ 5¢ 24¢ 23¢.
35&5@35&10%
Star.....23¢ 21¢ 19¢ 18¢.
10&10@10&12½%
Anchor.....23¢ 21¢ 20¢ 19¢ 18¢.....35%
Western.....23¢ 21¢ 20¢ 19¢ 18¢..40&10%
Empire Bronzed.....14 ₱ ℔.

Picture—
Brass Head, Sargent's list.....50&10&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list..40&10%
Niles' Patent.....40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—

Nuts, off list Dec. 18,1889: Square. Hex.
Hot Pressed..... 5.55¢ 6.10¢
Cold Punched..... 5.10¢ 5.60¢
In lots less than 100 ℔, ₱ ℔, add ½¢; 1-℔ boxes, add 1¢ to list.

Oakum—

Government.....₱ ℔ 7@7½¢
U. S. Navy.....₱ ℔ 6@6¼¢
Navy.....₱ ℔ 5¼@5½¢

Oilers—

Zinc and Tin.....65@65&10%
Brass and Copper .....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammers, Old Pattern, same list.....40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper 50%
Broughton's Zinc.....60%
Broughton's Brass 50%
Gem P. D. & Co. .....₱ gro. $2
Steel, Draper and Williams.....50%

Openers, Can.

Messenger's Comet.....₱ doz $3.00, 25%
American.....₱ gross $3.00
Duplex.....doz 25¢, 15@20%
Lyman's.....₱ doz $3.75, 20%
No. 4 French.....₱ doz $2.25, 55&60%
No. 5, Iron Handle.....₱ gr $6.00, 45@50%
Eureka.....₱ doz $2.50, 10%
Sardine Scissors.....₱ doz $2 75@3.00
Star.....₱ doz $2.75
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50 50&10&10%
Excelsior, No. 1, $2.50; No. 2, $1.50...40%
World's Best, ₱ gross, No. 1, $12.00 No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₱ doz $3.00.....35&5%
Domestic, ₱ doz $2.50.....45%
Champion ₱ doz $2.00.....

Packing, Steam—

Rubber—

Standard.....60&5@65%
Extra .....50@50&5%
N. Y. B. & P. Co., Standard..40&10@50%
N. Y. B. & P. Co., Empire.....50&5@65%
N. Y. B. & P. Co., Salamander. ₱ ℔ 65¢, 10@15%
Jenkins' Standard.₱ ℔ 80¢,...25@25&5%

Miscellaneous—
American Packing.....10¢@11¢ ₱ ℔
Russia Packing .....14¢ ₱ ℔
Italian Packing .....13¢@14¢ ₱ ℔
Cotton Packing .....15¢@17¢ ₱ ℔
Jute.....7¢@8¢ ₱ ℔

Padlocks—See Locks.

Pails.

Galvanized Iron—

	Quarts	10	12	14
Hill's Light Weight, ₱ doz.		$2.75	3.00	3.25
Hill's Heavy Weight, ₱ dz.		3.00	3.25	3.75
Whiting's		2.75	3.00	3.25
Sidney Shepard & Co.		2.35	2.85	3.05
Iron Clad		2.50	2.75	3.00
Fire Buckets		2.75	3.25	3.50
Buckets, see Well Buckets.				

Indurated Fibre Ware—25%
Star Pails, 12 qt .....₱ doz $6.00
Fire, Stable and Milk, 14 qt ..₱ doz $7.80

Standard Fibre Ware—

	Plain.	Decr'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt	6.50	7.50

Pans.

Dripping.
Small sizes.....₱ ℔ 6¼¢
Large sizes.....₱ ℔ 5½¢

Fry—
Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....70&10%
Acme Fry Pans .....60&10%

Paper and Cloth—

Sand and Emery—
List April 19, 1886.....50@50&10%
Sibley's Emery and Crocus Cloth.....30%

Parers.

Apple.
Advance.....₱ doz $4.75
Baldwin.....₱ doz 5.25
Bonanza.....₱ doz 5.00
Champion.....₱ doz 7.25
Daisy.....₱ doz 4.00
Dandy.....₱ doz 7.50
Eureka, 1885.....each 16.00
Family Bay State.....₱ doz 12.00
Favorite.....₱ doz 5.00
Gem.....₱ doz 5.25
Gold Medal.....₱ doz 4.00
Ideal.....₱ doz 4.00
Improved Bay State..₱ doz 27.00 @ 30.00
Little Star.....₱ doz 4.50
Monarch.....₱ doz 13.50
New Lightning.....₱ doz 5.50
Oriole.....₱ doz 4.00
Penn.....₱ doz 4.00
Perfection.....₱ doz 4.00
Pomona.....₱ doz 4.00
Rocking Table.....₱ doz 6 00
Turntable.....₱ doz 4.50
Victor.....₱doz 13.50
Waverly.....₱ doz 4.00
White Mountain.....₱ doz 4.00
72.....₱ doz 4.25
76.....₱ doz 5.75
78.....₱ doz. 6.50

Potato—
White Mountain .....₱ doz $4.50
Antrim Combination.....₱ doz $5.50
Hoosier .....₱ doz $13.50
Saratoga.....₱ doz $5.50

Pencils—

Faber's Carpenters'..... high list 50%
Faber's Round Gilt.....₱ gro $5.25
Dixon's Lead.....₱ gro $4.50
Dixon's Lumber.....₱ gro $6.75
Dixon's Carpenters' ....40&10%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.

Bow—
Humason, Beckley & Co.'s.....60&10%
Sargent & Co's....$17 and $18.....60&10%
Peck, Stow & W. Co... 50&10&50&10&5%

Curtain—
Silvered Glass.....net
White Enamel.....net

Escutcheon,
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—

List September 18, 1889.

1¼ and under, Plain 47½%
1¼ and under, Galvanized 40%
1¼ and over, Plain.....60%
1¼ and over, Galvanized 47½%
Boiler Tubes, Iron.
1¾ and under..... .....45%
2 to 4 inch..... .....50%
4-inch and larger.....52½%

Planes and Plane Irons—

Wood Planes—
Molding.....40&2%
Bench, First Quality.....55&2%
Bench, Second Quality.....60&2%
Bailey's (Stanley R. & L. Co.). ...40&10%

Iron Planes—
Bailey's (Stanley R. & L. Co.).....40&10@40&10&10%
Miscellaneous Planes (Stanley R. & L. Co.) .....20&10@20&10&10%
Victor Planes (Stanley R. & L. Co.). .....20&10@20&10&10%
Steer's Iron Planes.....35@35&10%
Merriken Mal. Iron Co.'s.....40@40&10%
Davis's Iron Planes .....40@40&10%
Birmingham Plane Co.....50@50&10%
Gage Tool Co.'s Self-Setting.....20&10%
Chaplin's Iron Planes .....40@40&10%
Sargent's .....30&10@30&10&10%
Standard Tool Co.....50@50&5%

Plane Irons—
Butcher's.....$5.00@$5.25 to 2
Buck Bros 30%
Auburn "Thistle.....
Ohio.....
Sandusky.....
S. & I. J. White.....25%

Plates.

Felloe .....₱ ℔ 6¢@6½¢

Pliers and Nippers—

Button's Patent.....30&10@40%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz .....20&10@30%
Humason & Beckley Mfg. Co..50@50&10%
Gas Pliers.....60%
Gas Pliers, Cuntar's Nickel Plated..60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel.....25%
P. S. & W. Cast Steel 50%
P. S. & W. Tinners' Cutting Nippers, add 6% dis 10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₱ doz, $12.00....30&5%
Gronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—

Regular List .....70&10@70&10&10%
Disston's.....50%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis' Inclinometers .....10&10%

Poachers.

Egg.
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....25%

Pokes, Animal—

Bishop's I. X. L.....₱ doz $6.00
Bishop's O. K.....₱ doz $5.25
Bishop's Pioneer.....₱ doz $3.75
Bishop's American.....₱ doz $2.75

Police Goods.

R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish, Metal.

Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Polish, Stove.

Joseph Dixon's.....₱ gro $6.00,'10%
Gem.....₱ gro $4.50, 10%
Gold Medal.....₱ gro $6.00, 25%
Mirror .....₱ pro $6.00, —%
Lustro .....₱ gro $4.75
Ruby.....₱ gro $3.75
Rising Sun, 5 gro lots .....₱ gro $5.50
Dixon's Plumbago.....₱ ℔ 8¢
Boynton's Noon Day, ₱ gro 13.00
Parlor Pride Stove Enamel..₱ gro 3 cans
Yates' Liquid, 2 3 5 10 gal....8¢ ₱ gal ...$0.90 .80 .70 .60
Yates Standard Paste Polish, 10-℔ cans, ₱ ℔ 15¢
Jet Black .....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.50
Diamond O. K. Enamel.....₱ gro $19.00
Bonnell's Liquid Stove Polish..₱ gro $9.00
Bonnell's Paste Stove Polish..₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans .....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans .....12½¢
Nickel Plate Paste .....₱ gro $6.00

Peppers, Corn—

Round or Square, 1 qt..₱ gr $10.00@10.50
Round or Square, 1½ qt..₱ gr $15@15.50
Round or Square, 2 qt..₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.

Glue—
Tinned.....40%
Enameled.....40&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy" 50%

Presses.

Fruit and Jelly—
Enterprise Mfg. Co.....20&10@30%
Henis .....₱ doz $2.50
Shepard's Queen City 40%

Pruning Hooks and Shears.—See Shears.

Pullers.

Nail.
Curtiss Hammer.....₱ doz $9.00
Giant, No. 1.....₱ doz. $13.00, 10%
Giant, No. 2.....₱ doz, $15.00, 10%
Pelican.....₱ doz, $9.00, 25%

Pulleys—

Hot House, Awning, &c.....60&10%
Japanned Screw..... 60&10%
Brass Screw.....50&10%
Japanned Side.....66⅔&10%
Japanned Clothes Line.....60&10%
Empire Sash Pulley.....55@60%
Moore's Sash, Anti-Friction.....50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70.....50%
Hay Fork, "F" Common and Pat. Bushed.....40%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating ...60%
Shade Rack 45%
Tackle Blocks.....See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00.....40

Pumps—

Cistern, Best Makers.....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper Goods.70@70&5%

Punches—

Saddlers' or Drive, good, ₱ doz...60@65%
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis&Call Co's Springfield Socket.50&5%
Spring, good quality....₱ doz $2.50@2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring and Check ..40%
Solid Tinners', P.S.&W.Co., ₱ doz $1.44, 55%
Tin'rs' Hollow Punches P.S.&W.Co.20&2%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—

Sliding Door. Wr't Brass. ₱ ℔ 35¢.....15%
Sliding Door, Bronzed Wr't Iron..₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%
Barn Door. Light. In. ½ ¾ 1
Per 100 feet.....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet....$2.15 2.70 3.25..net
Terry's Steel Rail, ₱ foot.....4½¢
Victor Track Rail, 7¢ ₱ foot.....50&2%
Carrier Steel Rail, ₱ foot.....4½¢
Moore's Wrought Iron.....25%

Rakes—

Cast Steel, Association goods 70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable.....70@70&5%
Gibbs Lawn Rake.....$12.00, 50&15
Canton Lawn Rake..... $9.00, 50&10
Ft. Madison Prize Bow Brace and Feerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00..... .....25%

Razor

J. R. Torrey Razor Co 20%
Wostenholme and Butcher, $10.00 to £, 10%
Jordan's AAA1, list Nov. 1, 1889.....50%
Jordan's Old Faithful, list Nov. 1, '89.50%
Electric.....List net

Razor Strops—See Strops, Razor.

Rings and Ringers.

Bull Rings—
Union Nut Co.....55%
Sargent's.....60%&10@70&5%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co's..50&10@50&10&10%
Eilrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—
Top of the Hill Ringers.....₱ doz $2.00
Top of the Hill Rings. .....₱ doz $1.25
Hill's Improved Ringers. ...₱ doz $4.25
Hill's Old Style Ringers.....₱ doz $2.75
Hill's Tongs.....₱ doz $4.50
Hill's Rings.....₱ doz bxs $2.15@2.25
Perfect Rings.....₱ doz bxs $1.60@1.70
Perfect Ringers.....₱ doz $2.15@$2.25
Blair's Hog Ringers.....₱ doz $2.25@2.50
Blair's Hog Rings.....₱ doz 90¢@$1.00
Champion Ringers..... ₱ doz $2.00
Champion Rings, Double.....₱ doz $2.25
Brown's Ringers.....₱ doz $2.00
Brown's Rings.....₱ doz $1.25@1.30

Rivets and Burrs—

Iron, list Nov. 17, '87.....40%
Copper.....50&10%
Coppered Iron, Bettina Brand.....40%

Rivet Sets—See Sets.

Rods—

Stair, Brass .....25&2%
Stair, Black Walnut .. ..₱ doz 40¢

Rollers—

Barn Door, Sargent's list .....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller 70%

Rope—

Manufacturers' prices:
Manila...½ in. and larger ₱ ℔ 15 ¢
Manila.....¾ in. ₱ ℔ 15½¢
Manila.....¼ and 5-16 in. ₱ ℔ 15¾¢
Manila Tarred Rope.....₱ ℔ 14½¢
Manila, Hay Rope.....₱ ℔ 15 ¢
Sisal...½ inch and larger ₱ ℔ 13 ¢
Sisal.....⅜ in. ₱ ℔ 12½¢
Sisal.....¼ and 5-16 in. ₱ ℔ 12¾¢
Sisal, Hay Rope.....₱ ℔ 12 ¢
Sisal, Tarred Rope.....₱ ℔ 11½¢
Sisal, Medium Lathe Yarn.₱ ℔ 11 ¢
Cotton Rope.....₱ ℔ 15@18¢ net
Jute Rope.....₱ ℔ 7½¢

1½% for cash in 10 days.

Wire—
List May 1, 1886.
Iron.....32½&2½%
Iron, Galvanized.....40&2½%
Cast Steel.....40&2½%

Rules—

Boxwood.....80&10&10@80&10&10&5%
Ivory.....50@50&10%
Starrett's Rules and Straight Edges, Steel..... .....25&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery.

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—

Disston's Circular.....45@45&5%
Disston's Cross Cuts.....45@45&5%
Disston's Hand 20@20&5%

Extras sometimes given by jobbers.

Atkins' Circular Shingle and Heading 50¢
Atkins' Silver Steel Diamond X Cuts ₩ foot 70¢
Atkins' Special Steel Dexter X Cuts ₩ foot 50¢
Atkins' Special Steel Diamond X Cuts ₩ foot 30¢
Atkins' Champion and Electric Tooth X Cuts ₩ foot 24@25¢
Atkins' Hollow Back X Cuts ₩ foot 18¢
Atkins' Mulay, Mill and Drag 40%
Atkins' One-Man Saw, with handles, ₩ foot 32¢
W. M. & C., Hand 30&5@30&10%
W. M. & C., Champion X Cuts, Regular ₩ foot 24@26¢
W. M. & C. X Cuts, Thin Back ₩ foot 27¢@26¢
Peace Circular and Mill 45%
Peace Hand Panel and Rip 25%
Peace Cross Cuts 45%
Richardson's Circular and Mill 45%
Richardson's X Cuts 45%
Richardson's Hand, &c. 25%

Hack Saws—
Griffin's, complete 40&10@50%
Griffin's Hack Saw, Blades 40&10@50%
Star Hack Saws and Blades 25%
Eureka and Crescent 25%

Scroll—
Lester, complete, $10.00 25%
Rogers, complete, $4.00 25%
Barnes' Builders' and Cabinet Makers', $15 25%
Barnes' Scroll Saw Blades 35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality, ₩ doz $21.00
Hatch, Tea, No. 161 ₩ doz $6.75@$7.00
Union Platform, Plain $2.10@2.20
Union Platform, Striped $2.20@2.30
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls 30@30&10%
Riehle Bros.' Platform 40%

Scale Beams—See Beams, Scale.

Scissors, Fluting 45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.50 30&10%
Box, 1 Handle ₩ doz $4.00. 10%
Box, 2 Handle ₩ doz $6.00, 10%
Defiance Box and Ship 20&10%
Foot 50&10@6%
Ship, Common ₩ doz $3.50 net
Ship, R. I. Tool Co. 10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—
Bench, Iron 55&10@55&10&10%
Bench, Wood, Beech ₩ doz $2.25
Bench, Wood, Hickory 20&10%
Hand, Wood 25&10@25&10&5%
Lag, Blunt Point, list Jan. 1, 1890. 75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 75%
Bed 25&5%
Hand Rail, Sargent's 66⅔&10%
Hand Rail, H. & B. Mfg. Co. 70&10@75%
Hand Rail, Am. Screw Co. 75%
Jack Screws, Millers Falls list. 50@50&5%
Jack Screws, P. S. & W. 35%
Jack Screws, Sargent 60&10@60&10&5%
Jack Screws, Stearns' 40@40&10%

Cork—
Humason & Beckley Mfg. Co. 40&10@50%
Williamson's 33⅓@33⅓&5%
Howe Bros & Hulbert 35%

Machine—
Flat Head, Iron .55%
Round Head, Iron 50%

Wood—
List March 1, 1889.
Flat Head Iron 50%
Round Head Iron 40%
Flat Head Brass 45%
Round Head Brass 35%
Flat Head Bronze 45%
Round Head Bronze 35%
Rogers' Drive Screws 66⅔%
Extra 5 @ 10 % often given.

Scroll Saws—See Saws, Scroll.

Scythe Snaths—See Snaths, Scythe.

Sets.

Awl and Tool.
Aiken's Sets, Awls and Tools, No. 20, ₩ doz $10.00 55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9. 25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12, 2, $18 25%
Henry's Combination Haft ₩ doz $6.50
Brad Sets, No. 42, $10.50; No. 43, $12.50 70&10&5%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 30&10%

Nail—
Square ₩ gr., $4.00@$4.25
Round ₩ gr. $3.25
Buck Bros. 27½%
Cannon's Diamond Point ₩ gr., $12, 20%

Rivet.
Regular list 50&10%

Saw—
Stillman's Genuine ₩ doz $5.00@7.75, 40&5%
Stillman's Imita ₩ doz $3.25@5.25, 40&5@40&10%
Common Lever ₩ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00, 40&10@50%
Leach's, No. 0, $8.00; No. 1, $15, 15&20%
Nash's 20&10@20&10&10%
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer 30&5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine $13.00, 50&10%
Aiken's Imitation $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star 25%
Leopold 40&10@ 50%
Atkin's Lever ₩ doz No. 1, $6.00
Atkin's Criterion ₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 40&10%
Avery's Saw Set and Punch 50%
Chieftain H. R. Co.'s Superior ₩ doz $15, 50%

Sharpeners, Knife.

Parkin s.
Applewood Handles ₩ doz $6.00, 40%
Rosewood or Cocobolo ₩ doz $9.00, 40%

Shaves, Spoke.

Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) 40&10%
Stearns' 30&10%
Cincinnati 25&10%

Shears—

American (Cast) Iron 75&10@75&10&5%
Barnard's Lamp Trimmers ₩ doz $3.75
Tinners' 20&2%
Seymour's, List, Dec., 1881, 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881, 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears 33⅓%
First quality C. S. Trimmers 80@80&10%
Second quality C. S. Trimmers, 80&10@80&10&10%
Acme Cast Shears 10&10%
Diamond Cast Shears 10%
Clipper 10&10%
Victor Cast Shears 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Chicago Drop Forge & F. Co., Solid Steel Forged 60%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list. 60%
Electric List net

Pruning Shears and Hooks.
Disston's Combined Pruning Hook and Saw ₩ doz $18.00, 20&10%
Disston's Pruning Hook, ₩ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools 40%
Pruning Shears, Henry's Pat, ₩ doz $3.75@4.00 net
Henry's Pruning Shears, ₩ doz $4.25@4.50 net
Wheeler, M. & C. Co.'s Combination, ₩ doz $12.00, 20%
Dunlap's Saw and Chisel, ₩ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co. 60%

Tinners', &c.—
Shears and Snips (P. S. & W.) 20@25%
Snips, J. Mallinson & Co. 33⅓%

Sheaves—

Sliding Door—
M. W. Co., list July, 1888 .50&10@60&5%
R. & E., list Dec. 18, 1885 55&20%
Corbin's list 60&10&2%
Patent Roller 60&10&2%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 60&2%
Moore's Anti-Friction 50%

Sliding Shutter—
R. & E. list Dec. 18, 1885 60&10&2%
Sargent's list 60&10%
Reading list 60&10&10%

Ship Tools—

L. & I. J. White 20&5%

Shoes, Horse, Mule, &c.—

Horse—
Burden's, Perkins', Phœnix, at factory, $4.00

Mule—
Add $1 ₩ keg to above prices.

Ox, Wrought—
Ton lots ₩ ℔ 9¢
1000 ℔ lots ₩ ℔ 9½¢
500 ℔ lots ₩ ℔ 10¢

Shot—

(Eastern prices 2¢ off, cash, 5 days.
Drop, ₩ bag, 25 ℔ $1.35
Drop, ₩ bag, 5 ℔ .32
Buck and Chilled, ₩ 25-℔ bag 1.60
Buck and Chilled, ₩ 5-℔ bag .37

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron 50&10%
Griffith's C. S. 60@60&10%
Griffith's Solid C. S. R. R. Goods 20%
Old Colony (Sanford Fork & Tool Co.) 35%
St. Louis Shovel Co. 20@20&7½%
Hussey, Binns & Co. 15@25%
Hubbard & Co. 20@20&7½%
Lehigh Mfg. Co. 50&10%
Payne Pettebone & Son, list January, 1886 30%
Remington's (Lowman's Pat.) 30&10@40%
Rowland's, Black Iron 50&10%
Rowland's Steel 50&5@60&10%

Shovels and Tongs—

Iron Head 60&10@60&10&5%
Brass Head 60&10&10%

Sieves—

Mann's Tin Rim 50&25%
Buffalo Metallic, S. S. & Co. 50&25%
Shaker (Barler's Pat.) Flour Sifters ₩ doz $2.00; ₩ gr $21.60
Electric ₩ gr $21.00
A. & W. Sifters ₩ doz $.00
Hunter's ₩ doz $2.00
Smith's Adjustable Sifters ₩ doz $2.00
Smith's Adjustable Milk Strainer. ₩ doz $2.00
Smith's Adjustable T. & C. Strainer. ₩ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₩ doz..	80¢	$1.00
Mesh 20, Nested, ₩ doz..	95¢	1.10
Mesh 24, Nested, ₩ doz..	$1.15	1.25

Skeins, Thimble—

Western list 75&5@75&10%
Columbus Wrt. Steel. Special net prices
Coldbrookdale Iron Co. 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 35%

Slates—

School, by case 50@50&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.) 65%
Fitch's (Bristol) 50&10%
Hotchkiss 10%
Andrews 50%
Sargent's Patent Guarded 70&10&10%
German, new list 40&10%
Covert 50&2%
Covert, New Patent 50&5&2%
Covert, New R. E. 60&2%
Covered Spring 60&10&10%

Snaths, Scythe.

List 50&10@50&10&5%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—
Cuspidors, 8½-inch, ₩ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—
Basting, Cen. Stamp. Co.'s list 70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list 70&10%
Buffalo S. S. & Co. 33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).
Meriden Brit. Co., Rogers 40, 15, 10&5%
C. Rogers & Bros. 40, 15, 10&5%
Rogers & Bro. 40, 15, 10&5%
Reed & Barton 40&10%
Wm. Rogers Mfg. Co. 40, 15, 10, 5&5%
Simpson, Hall, Miller & Co. 40, 15, 10&5%
Holmes & Edwards Silver Co. 40, 15, 10, 5&5%
L. Boardman & Son 50%

Miscellaneous.
Holmes & Edwards Silver Co.:
No. 67 Mexican Silver 50&10&5%
No. 30 Silver Metal 50&10&5%
No. 24 German Silver 50&10&5%
No. 50 Nickel Silver 50&5%
No. 49 Nickel Silver 50&10&5%
Rogers' Silver Metal 50, 10&5%
18% Rogers' German Silver 60&5%
22% Rogers' Nickel Silver 50&5%
German Silver 50@50&5
German Silver, Hall & Elton 50&5% cash
Nickel Silver 50&5@50&10&5% cash
Britannia 60%
Boardman's Nickel Silver 50&5% cash
Boardman's Britannia Spoons, case lots 60&5% cash

Springs, Door.

Torrey's Rod, regular size ₩ doz $1.80
Gray's, ₩ gr., $20.00 30%
Bee Rod ₩ gr., $20.00 30%
Warner's No. 1, ₩ doz, $2.50; No. 2, $3.30 40&10@50%
Gem (Coil), list April 19, 1886 10%
Star (Coil), list April 19, 1886 20%
Victor (Coil) 60@60&10%
Champion (Coil) 60&10@60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75.. %
Cowell's No. 1, ₩ doz, $18.00; No. 2, $15.00 50%
Rubber, complete, ₩ doz, $4.50 55&10%
Hercules 50%
Shaw Door Check and Spring 25&30&35%
Elliptic, Concord, Platform and Half Scroll 60@60&5%
Cliff's Bolster Springs 25%

Squares—

Steel and Iron, Nickel-Plated 80 &10%
Try Square and T Bevels 60&10@60&10&10%
Disston's Try Square and T Bevels 50%
Winterbottom's Try and Miter 30&10%
Starrett's Micrometer Caliper Squares, 25%
Avery's Flush Bevel Squares 40%
Avery's Bevel Protractor 50%

Squeezers.

Fodder.—
Blair's ₩ doz $2.00
Blair's "Climax" ₩ doz $1.25

Lemon—
Porcelain Lined, No. 1 ₩ doz $6.00, 25&30%
Wood, No. 2 ₩ doz $3.00, 35%
Wood, Common ₩ doz $1.70@1.75
Dunlap's Improved ₩ doz $3.75, 20%
Sammis No. 1, $5.00; No. 2, $9; 12, $18 ₩ doz 25&10%
Jennings' Star ₩ doz $2.50
The Boss ₩ doz $2.50
Dean's Nos. 1, ₩ doz $6.50; 2, $8.35; 3, $1.90; Queen, $2.50
Little Giant 50&50&5%
King 40&5%
Hotchkiss Straight Flash ₩ doz $12.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—
Barbed, ½ in. and larger ₩ ℔ 7@7½¢
Barbed, ¾ in. ₩ ℔ 8@8½¢
Fence Staples, Galvanized, Fence Staples, Plain } Same price as B'rb Wire. See Trd. Rep.

Steelyards 40&10@50%

Stocks and Dies—

Blacksmith's
Waterford Goods 40@40&10%
Butterfield's Goods 40@40&10%
Lightning Screw Plate 25@30%
Reece's New Screw Plates 33⅓&5@40%
Reversible Ratchet 30%
Gardner 25%

Stops, Bench.

Morrill's ₩ doz $9, 50%
Hotchkiss's ₩ doz $5, 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's ₩ doz $3. 10%
Cincinnati 25&10%

Stone—

Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone ₩ ℔ 2½¢
Washita Stone, Extra ₩ ℔ 20@21¢
Washita Stone, No. 1 ₩ ℔ 15@16¢
Washita Stone, No. 2 ₩ ℔ 11@12¢
Washita Slips, No. 1, Extra ₩ ℔ 37@40¢
Washita Slips, No. 1 ₩ ℔ 25@26¢
Arkansas Stone, No. 1, 4 to 6 in ₩ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in ₩ ℔ $1.85
Turkey Oil Stone, 4 to 8 in ₩ ℔ 40¢
Turkey Slips ₩ ℔ $1.00@1.50
Lake Superior, Chase ₩ ℔ 16¢
Lake Superior Slips, Chase ₩ ℔ 31@32¢
Seneca Stone, Red Paper Brand ₩ ℔ 18@20¢
Seneca Stone, High Rounds ₩ ℔ 20@25¢
Seneca Stone, Small Whets ₩ gro $24.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.

Cast Steel, Polished ₩ doz $2.25
Cast Iron, Steel Points ₩ doz 80¢
Socket ₩ doz $1.75
Bullard's 25@25&10%

Strops, Razor—

Genuine Emerson 60@60&5%
Imitation " ₩ doz $2.00, 20&10&5%
Torrey's 20%
Badger's Belt and Com ₩ doz $2.00
Lamont Combination ₩ doz $4.00
Jordan's Pat Padded, list Nov. 1, '89 50%
Electric List net

Stuffers or Fillers, Sausage—

Miles' "Challenge," ₩ doz $30, 50@50&5%
Perry ₩ doz, No. 1, $15.00; No. 0, $21.00 50&5@50&10%
Draw Cut No. 4, each $30.00 20%
Enterprise Mfg. Co. 20&10@30%
Silver's 40&10%

Sweepers, Carpet.

Bissell No. 5 ₩ doz $17.00
Bissell No. 7 New Drop Pan. ₩ doz $19.00
Bissell, Grand ₩ doz $36.00
Grand Rapids ₩ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic ₩ doz $15.00
Jewel ₩ doz $17.00
Improved Parlor Queen, Nickeled ₩ doz $27.00
Japanned ₩ doz $24.00
Excelsior ₩ doz $22.00
Garland ₩ doz $18.00
Parlor Queen ₩ doz $24.00
Housewife's Delight ₩ doz $15.00
Queen ₩ doz $16.00
Queen, with band ₩ doz $18.00
King ₩ doz $30.00
Weed, Improved ₩ doz $18.00
Hub ₩ doz $16.00
Cog-Wheel ₩ doz $16.00
Conqueror ₩ doz $22.00
Easy ₩ doz $22.00
Monarch ₩ doz $22.00
Goshen ₩ doz $21.00
Advance ₩ doz $18.00
Ladies' Friend, No. 1, ₩ doz, $15.00; No. 2 ₩ doz $16.00
American ₩ doz $15.00
Grand Republic ₩ doz $35.00

Tacks, Brads, &c.—

List Oct. 19, 1889.

Carpet Tacks—
American Iron, Blued 70%
American Iron, Tin'd or Cop'd. 70%
Steel, Plain or Bright 70%
Steel Tinned or Coppered 70%
Swedes Iron, Blued 70%
Swedes Iron, Tinned or Cop'd. 70%
American Iron Cut Tacks 67½%
Swedes Iron Upholst'rs Tacks, S. S. 70%
Swedes Iron Upholsterers' Tacks, Tinned, S. S. 70%
Swedes Iron Card and Upholsterers' Tacks, Lanc. 66⅔%
Swedes Iron Card and Upholsterers' Tacks, Tinned, Lanc. 66⅔%
Gimp and Lace Tacks Lanc., Swedes Iron 66⅔%
Gimp and Lace Tacks, Lanc., Swedes Iron, Tinned 66⅔%
Gimp and Lace Tacks, S. S 70%
Gimp and Lace Tacks Tinned, S. S. 70%
Swedes Iron Basket or Trimmers' Tacks, Lanc. 66⅔%
Miners' Tacks, S. S 70%
Bill-Posters' or Railroad Tacks, Lanc., Swedes 66⅔%
Bill-Poster's' or Railroad Tacks, S. S. 70%
Copper Tacks 50%
Copper Finish & Trunk Nails 50%
Cigar Box Nails 50%
Zinc Glaziers' Points 50%
Picture-Frame Points 50%
Looking-Glass Tacks 50%
Brush Tacks 50%
Tin-Capped Trunk Nails 60%
Finishing Nails 65%
Trunk and Clout Nails, Black and Tinned 66⅔%
Common and Patent Brads 60%
Hungarian Nails 62½%
Basket and Chair Nails 62½%
Leathered Carpet Tacks 40%

Miscellaneous—
Double-Pointed 82½%
Wire Carpet Nails 50&10%
Plymouth Rock Steel Carpet Tacks. 25%

Extra 10&10@10&10&5% See Trade Report

Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50&10%

Tap Borers—See Borers, Tap.

Tapes, Measuring—

American.....33⅓@33⅓&5%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale- Steel

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears, Tinners', &c.

Tinware—

Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10&5%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.

Coopers'—
Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves, Cincinnati Tool Co.....20%
Lumber.
Ring Peavies, "Blue Line"...₱ doz $20.00
Ring Peavies, Common.....₱ doz $18.00
Steel Socket Peavies.....₱ doz $21.00
Mall. Iron Socket Peavies.....₱ doz $19.00
Cant Hooks, "Blue Line".....₱ doz $16.00
Cant Hooks, Common Finish..₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft. $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₱ doz $18.00
Saw.
Atkins' Perfection.....₱ doz $17.00
Atkins' Excelsior.....₱ doz $6.00
Atkins' Giant.....₱ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters—See Lifters, Transom.

Traps—

Game—
Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%

Mouse and Rat—
Mouse Wood, Choker, ₱ doz holes, 11@12¢
Mouse, Round Wire.....₱ doz $1.50, 10%
Mouse, Cage, Wire.....₱ doz $2.50, 10%
Mouse, Catch-'em-alive....₱ ds $2.50 15%
Mouse, Bonanza.....₱ gr $10.00
Mouse Delusion.....₱ gr $10.00@$12.00
Rat, Decoy.....₱ gr $10.00, 10%
Ideal.....₱ gr $10.00
Cyclone.....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 90¢; in full cases, ₱ doz.....75¢
Hotchkiss Imp. Rat Killer..₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50
Schuyler's Rat Killer.....₱ gro $15.00

Triers—

Butter and cheese.....25%

Trimmers, Spoke.

Bonney's.....₱ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'.....₱ doz $9.00, 20%
Cincinnati.....25%

Trowels—

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.....25%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—

See Pipe.

Twine—

Flax Twine—	BC.	R.
No. 9, ¼ and ⅛ ℔ Balls	26¢	34¢
No. 12, ¼ and ⅛ ℔ Balls	25¢	33¢
No. 18, ¼ and ⅛ ℔ Balls	22¢	32¢
No. 24, ¼ and ⅛ ℔ Balls	22¢	32¢
No. 36, ¼ and ⅛ ℔ Balls	20¢	31¢

No. 264, Mattrass, ¼ and ⅛ ℔ Balls.53@54¢
Chalk Line, Cotton, ⅛ ℔ Balls.....25¢
Mason Line, Linen, ⅛ ℔ Balls.....35¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine).....15¼¢
3-Ply Hemp, 1 ℔ Balls.....16¢@16¼¢
3-Ply Hemp, 1¼ ℔ Balls.....15¢@15¼¢
Cotton Wrapping, 5 Balls to ℔.....15¢@16¢
2, 3, 4 and 5-Ply Jute, ⅛ ℔ Balls.....10¢
Wool.....6¼¢@8¼¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

Vises—

Solid Box.....50&10@50&10&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40@5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%
Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....66⅔&10%
Hopkins'.....₱ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Combination Hand Vises.....₱ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.

Cast Iron, Hollow—
Stove Hollow-Ware—
Ground.....55&5@60&5%
Unground.....65&10@65&10&5%
White Enameled-Ware—
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Tinned Boilers and Saucepans.....40&5%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Enameled—
Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%
Kettles—
Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10¼ in.	$2.00	$2.25
Wash-Basins, 12 in.	2.25	2.75
Keelers, 11¼ in.		4.06
Cuspidors.		3.00
Spittoons, "Daisy," 8 in..	4.00	4.50
Peck Measure.	4.00	
Half-peck Measure.	3.50	

See also Pails.

Indurated Fiber—25%
Spittoons, No. 2, ₱ doz.....$9.00
Basins, Ringed, ₱ doz., No. 2, $4.80; No. 3.....$4.20
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₱ nest.....$7.50
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest.....$3.70
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest.....$2.25
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₱ set.....$3.00
Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ₱ set.....$3 00
See also *Pails.*
Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.
Reed & Barton.....
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother.....
Hartford Silver Plate Co.....
William Rogers Mfg. Co.....
} 40&5%
} 40&5&5%

Washers—

Size.	¼	5-16	⅜	½	⅝	¾	1
Washers....	6¾	5¾	4¾	3¾	3	3	3

In lots less than 200 ℔, ₱ ℔, add ¼¢, 5-2 boxes 1¢ to list.

Wedges—

Iron.....₱ ℔ 3½¢
Steel.....₱ ℔ 4 ¢

Weights, Sash—

Solid Eyes.....₱ ton $18@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.

8 in., $2.25; 10 in., $2.70; 12 in., $3.25

Wire and Wire Goods—

Iron—
Market.
Br. & Ann., Nos. 0 to 18.....72½&5%
Cop'd, Nos. 0 to 18.....70%
Galv., Nos. 0 to 18.....62½&5%
Tin'd, Tinned list Nos. 0 to 18.....62½&5%
Stone,
Br. and Ann'd, Nos. 16 to 18.....72½&5%
Bright and Ann'd, Nos. 19 to 26.....75%
Br. and Ann'd, Nos. 27 to 36.....77½&5%
Tinned.....
Tinned Broom Wire, 18 to 21, ₱ ℔...5½¢
Galvanized Fence, Nos. 8 and 9.....65%
Annealed Fence, Nos. 8 and 9.....75%
Annealed Grape, Nos. 10 to 14.....75%
Brass, list Jan. 18, 1884.....25%
Copper, list Jan. 18, 1884.....25%
Barb Fence.....See Trade Report
Annealed Wire on Spools.....50%
Malin's Steel and Tin'd on Spools.....50%
Malin's Brass and Cop. on Spools.....40%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to $2, 30%
Steel Music Wire, Nos. 12 to 20..55¢ ₱ ℔
Picture Wire.....New list 50%
Wire Clothes Lines, see Lines.

Bright Wire Goods—
Standard list.....35%

Wire Cloth and Netting.
Painted Screen Cloth, good quality, ₱ 100 sq. ft., $1.60 @ $1.75
Galvanized Wire Netting.....70%10@75%

Wire Rope—See Rope, Wire.

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&5%
Coes' "Mechanics".....50&10&5%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'..60&10%
Lamson & Sessions' Standard...70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
} 75@75&10
Bemis & Call's
Pat. Combination.....25%
Merrick's Pattern.....25%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₱ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....30&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....60&5%
Acme, Nickeled.....50&5%
Walker's.....55&5%
Diamond Steel.....55&5%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&5%

Wringers, Clothes—

List March 11, 1889, 2% cash.

Wrought Goods—

Staples, Hooks, &c., list Jan. 12, 1886, 30&15@35%

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw, per gal.	62	@	64
Linseed, City, boiled.	64	@	66
Linseed, Western, raw	59	@	60
Lard, City, Extra Winter	..	@	51
Lard, City, Prime	49	@	50
Lard, City, Extra No. 1	45	@	46
Lard, City, No. 1	42	@	43
Lard, Western, prime	49	@	50
Cotton-seed, Crude, prime	31	@	32
Cotton-seed, Crude, off grades	28	@	30
Cotton-seed, Summer Yellow, prime	..	@	36
Cottonseed, Summer Yellow, off grades	31	@	33½
Sperm, Crude	..	@	65
Sperm, Natural Spring	67	@	69
Sperm, Bleached Spring	72	@	74
Sperm, Natural Winter	74	@	77
Sperm, Bleached Winter	79	@	82
Whale, Crude	..	@	45
Whale, Natural Winter	49	@	..
Whale, Bleached Winter	51	@	52
Whale, Extra Bleached	54	@	55
Sea Elephant, Bleached Winter	60	@	62
Menhaden, Crude, Sound	22½	@	23½
Menhaden, Crude, Southern	..	@	..
Menh den, Light Pressed	26	@	28
Menhaden, Bleached W'ter	32	@	33
Menhaden, Extra Bleached	35	@	36
Tallow, City, prime	..	@	45
Tallow, Western, prime	..	@	..
Cocoanut Ceylon	..	@	6¼
Cocoanut, Cochin	6¼	@	6¾
Cod, Domestic	32	@	..
Cod, Foreign	33	@	34
Red Elaine	31	@	34
Red Saponified	4¼	@	4½
Bank.....per gal	25	@	..
Straits	27	@	..
Olive, Italian, bbls	81	@	83
Neatsfoot, prime	62½	@	75
Palm, prime, Lagos....₱ ℔	5¾	@	6¼

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test.....per gal	8	@	10
Black, 29 gravity, 15 cold test	8½	@	9¼
Black, 29 gravity, summer	..	@	7
Cylinder, light, filtered	..	@	9
Cylinder, dark, filtered	14	@	20
Cylinder, dard, st'm refined	10	@	18
Paraffine, 23½ @ 24 gravity	11	@	12
Paraffine, 25 gravity	10	@	11
Paraffine, 28 gravity	8½	@	9
Paraffine, red, 21 @ 22 gr'ty	14	@	14½
Paraffine, red, 22½@23 gr'ty	12	@	13

Paints and Colors.

Barytes, Prime White..... ₱ ton.	$22.00	@	22.50
Barytes, Amer. refined	20.00	@	....
Barytes, Amer. No. 1	18.00	@	....
Barytes, Amer. No. 2	16.00	@	....
Barytes, Amer., off-color.	13.00	@	15.00
Blue, Celestial.....₱ ℔	5½	@	7½
Blue, Chinese	45	@	50
Blue, Prussian	20	@	25
Blue, Ultramarine	7	@	25
Brown, Spanish	½	@	1
Brown, Vandyke, Amer.	3	@	3½
Brown, Vandyke, English	6	@	8
Black, American Drop	8	@	10
Black, English Drop	12	@	14
Black, Frankfort, Drop	5	@	18
Black, Lamp, common	12	@	18
Black, Lamp, medium	19	@	25
Black, Lamp, prime	27	@	33
Carmine, No. 40, in bulk.	3.10	@	..
Carmine, No. 40, in boxes or barrels	3.20	@	..
Carmine, No. 40, in ounce bottles	4.20	@	..
Chalk, in bulk.... ₱ ton.	2.00	@	2.50
Chalk, in bbls..₱ 100 ℔.	30	@	35
China Clay, English..... ₱ ton.	13.50	@	18.00
China Clay, Southern	10.00	@	11.50
Cobalt Oxide, prep'd	2.90	@	....
Cobalt Oxide, black..... lots 100 ℔.	2.60	@	....
Cobalt, Oxide, black..... less 100 ℔.	2.65	@	....
Crocus Martus, Engl. ₱ ℔.	1¼	@	2½
Crocus, American	1½	@	2½
Green, Paris, in bulk	14	@	14½
Green, Paris, 170 @ 175 ℔ kegs	14½	@	15
Green, Paris, small pack.	16	@	21
Green, Chrome, ordinary	8	@	13
Green, Chrome, pure	22	@	25
Lead, Eng., R.B. white	9	@	10
Lead, Amn. White, dry or in oil: Kegs, lots less than 1000 ℔..		@	7
Kegs, lots 1000 ℔ to 5 tons.		@	6½
Kegs, lots 5 tons to 12 tons..		@	6¾
Kegs, lots 12 tons and over..		@	6¼
Lead, White, in oil, 25 ℔ tin pails, add to keg price.		@	½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price		@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.		@	2½
Lead, Red, bbls. and ½ bbls.	6	@	6¾
Lead, Red, kegs	6¼	@	7
Litharge, kegs	6¼	@	7
Litharge, bbls. and ½ bbls	6	@	6¾

TERMS, &c.—Lead and Litharge.—On lots of 1000 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle	1.35	@	1½
Ocher, French Washed	1½	@	2½
Ocher, German Washed	1½	@	3
Ocher, 'American	¾	@	1½
Orange Mineral, English	8½	@	9½
Orange Mineral, French	9	@	9¾
Orange Mineral, German	8½	@	9½
Orange Mineral, American	8	@	8½
Paris White, English Cliff-stone	90	@	1.10
Paris White, American	70	@	80
Red, Indian, English	5½	@	7
Red, Indian, American	2	@	6
Red, Turkey	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American ₱ 100 ℔.	90	@	1.25
Red, Venetian, English	1.00	@	1.25
Sienna, Italian, Burnt and Powd. ₱ ℔	5	@	6½
Sienna, Ital., Burnt Lumps	1½	@	3½
Sienna, Ital., Raw, Powd	5	@	6½
Sienna, Ital., Raw Lumps	2	@	3½
Sienna, American, Raw	1½	@	1¾
Sienna, American, Burnt and Powdered	1½	@	1¾
Talc, French	1½	@	1½
Talc, American	1	@	1½
Terra Alba, Fr'ch. ₱ 100 ℔	72½	@	80
Terra Alba, English	80	@	85
Terra Alba, American No. 1	70	@	75
Terra Alba, American No. 2	38	@	40
Umber, Turkey, Bnt. and Powd. ₱ ℔	3½	@	4
Umber, Turkey Bnt. Ln	2½	@	3
Umber, Turkey, Raw and Powdered	3½	@	..
Umber Turkey, R'w Lmps	2½	@	2¾
Umber, Turkey, Bnt. Amer.	1½	@	1¾
Umber, Turkey, R'w Amer.	1½	@	1¾
Yellow, Chrome	10	@	25
Vermilion, Americ. Lead	11½	@	13
Vermilion, Quicks'er, bulk	..	@	75
Vermilion, Quicks'er, bags	..	@	76
Vermilion, Quicksilver, smaller pkgs	..	@	80
Vermilion, English Import	83	@	85
Vermilion, Imitation, Eng.	8	@	25
Vermilion, Trieste	75	@	80
Vermilion, Chinese	88	@	90
Whiting, Common. ₱ 100 ℔	40	@	45
Whiting, Gilders'	50	@	55
Zinc, American, dry ₱ ℔	3¾	@	4½
Zinc, French, Red Seal	..	@	7¾
Zinc, French, Green Seal	..	@	7½
Zinc, French, V. M. X	6	@	6½
Zinc, Antwerp, Red Seal	..	@	6¾
Zinc, Antwerp, Green Seal	..	@	7½
Zinc, German, L. Z. O	..	@	6¼
Zinc, V M. in Poppy Oil, Red Seal, lots of 1 ton and over	10¼	@	10¾
lots less than 1 ton	10¾	@	11
Zinc, V. M. in Poppy Oil, Red Seal, lots of 1 ton and over	..	@	..
Lots of less than 1 ton	9¼	@	10
	9¾	@	10¼

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %, 50 bbls, 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese.....₱ ℔	35	@	40
Blue, Prussian	29	@	45
Blue, Ultramarine	12	@	18
Brown, Vandyke	7	@	12
Green, Chrome	8	@	13
Green, Paris	15	@	18
Sienna, Raw	7	@	13
Sienna, Burnt	7	@	13
Umber Raw	7	@	10
Umber, Burnt	7	@	10

Glue.

Low Grade.....₱ ℔	8	@	10
Cabinet	12	@	14
Medium White	13	@	15
Extra White	17	@	20
French	9	@	20
English	10	@	15
Irish	12	@	15

CURRENT METAL PRICES.

JULY 23, 1890.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
¾ to 2 in. round and square..	₩ lb 2 00 @ 2.10¢
1 to 6 in. x ½ to 1 in.....	
Refined Iron:	
¾ to 2 in. round and square..	
1 to 4 in. x ½ to 1½ in.....	₩ lb 2.20 @ 2.30¢
4½ to 6 in. x ⅝ to 1 in.....	
1 to 6 in. x ¼ and 5-16	₩ lb 2.40 @ 2.50¢
Rods—¾ and 11-16 round and sq..	₩ lb 2.30 @ 2.40¢
Bands—1 to 6 x 3-16 to No. 12.....	₩ lb 2.50 @ 2.60¢
"Burden Best" Iron, base price..	₩ lb 3.00 @ ....¢
Burden's "H. B. & S." Iron, base price.....	₩ lb 2 80 @ ....¢
"Ulster".....	₩ lb 3.00 @ ....¢
Norway Bars	4.00 @ ....¢
Norway Shapes	5.00 @ ....¢

Merchant Steel from Store.

	Per pound.
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots.....	2¾¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots.....	5¢

Sheet Iron from Store.

	Common American.		R. G.	Cleaned.
10 to 16.....	₩ lb 3.00	@ 3.00¢	3.50	@ ....¢
17 to 20.....	₩ lb 3.25	@ 3.25¢	3.50	@ 3.75 ¢
21 to 24.....	₩ lb 3.35	@ 3.35¢	3.75	@ ....¢
25 and 26....	₩ lb 3 45	@	3.75	@ ....¢
27.....	₩ lb 3.55	@ 3.62½¢	4.00	@ ....¢
28.....	₩ lb 3.75	@ ... ..¢	4.25	@ ....¢
	B. B.		2d qual.	
Galv'd, 14 to 20,	₩ lb, 5.00	@ ...	4.75½	@ ....¢
Galv'd, 21 to 24,	₩ lb, 5.37½	@	5.12½	@ ....¢
Galv'd, 25 to 26,	₩ lb, 5.75	@	5.50	@ ....¢
Galv'd, 27.....	₩ lb, 6.12½	@ ...	5.85½	@ ....¢
Galv'd, 28.....	₩ lb, 6.50	@ ..	6.23	@ ....¢
Patent Planished.....	₩ lb A 10¢		B, 9¢	
Russia.....	₩ lb 9½¢	@ 10¢		
American Cold Rolled B. B.....	₩ lb 5¢	@ 7¢		
Craig Polished Sheet Steel.....	₩ lb, 8½¢			

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast.....	₩ lb 16 ¢
Best Double Shear.....	₩ lb 15 ¢
Blister, 1st quality.....	₩ lb 12 ¢
German Steel, Best.....	₩ lb 10 ¢
2d quality.	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality.....	₩ lb 15 ¢
2d quality.....	₩ lb 14 ¢
3d quality.....	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 45 ¢
" " "Titanic".....	₩ lb 20 ¢

METALS.

Tin.

	Per lb
Banca, Pigs.....	22½¢
Straits, Pigs.....	22¾¢
Straits in Bars	25 ¢

Tin Plates.

	Charcoal Plates.—Bright.		Per box.
Melyn Grade.....	IC, 10 x 14..	@	$6 25
" "	... .IC, 12 x 12..	@	6 50
" "	. .... IC, 14 x 20..	@	6.25
" "	.....IC, 20 x 28..	@	12.75
" "	....IX, 10 x 14..	@	7.75
" "	....IX, 12 x 12..	@	8.00
" "	....IX, 14 x 20..	@	7.75
" "	.....IX. 20 x 28..	@	15.50
" "	.....DC, 12½ x 17.. ..	@	5.75
" "	.....DX, 12½ x 17..	@	7.25
Calland Grade.....	IC, 10 x 14,.	@	6.25
" "	.....IC, 12 x 12..	@	6.50
" "	.....IC, 14 x 20.. . .	@	6.15
" "	.....IX, 10 x 14.. . .	@	7.40
" "	. .....IX, 12 x 12..	@	7.65
" "	.....IX 14 x 20.	@	7.40
Alleway Grade.....	IC, 10 x 14.. ...	@	5.35
" "	.. ...IC, 12 x 12..	@	5.50
" "	.....IC, 14 x 20..	@	5.35
" "	.....IC, 20 x 28..	@	10.75
" "	.....IX. 10 x 14..	@	6.50
" "	. ....IX, 12 x 12..	@	6.65
" "	..... IX, 14 x 20..	@	6.50
" "	.....IX, 20 x 28..	@	13.25
" "	...DC, 12½ x 17.. ...	@	5.00
" "	. .DX, 12½ x 17.. 6 00	@	6.00
	Coke Plates.—Bright.		
Steel Coke.—IC, 10 x 14, 14 x 20..		@	$5.12½
	10 x 20..	@	7.25
	20 x 28.. ...	@	10.25
	IX, 10 x 14, 14 x 20..	@	6.00
BV Grade.—IC, 10 x 14, 14 x 20..		@	4.87½
	Charcoal Plates.—Terne.		
Dean Grade.—IC, 14 x 20..		@	$5.00
	20 x 28.	@	10.00
	IX, 14 x 20.....	@	5.80
	20 x 28.....	@	11.60
Abecarne Grade.—IC, 14 x 20...		@	4.85
	20 x 28...	@	9.87
	IX, 14 x 20.... ...	@	5.8
	20 x 28..	@	11 60

Tin Boiler Plates.

I CX, 14 x 26.....	112 sheets.....	$13.00 @ $13.00
I CX, 14 x 28.....	112 sheets.....	@ 13 25
I CXX, 14 x 31....	....112 sheets	@ 14.75

Copper.

DUTY: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.

Ingot.

Lake	@ 17½¢
Baltimore Grade.....	@ 15½¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, June 27, 1890, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		25	25	25	26	27	28	31	33
30		72	25	25	25	26	28	30	34	...
36	96		25	25	25	27	29	33	36	....
36		96	25	25	26	28	30	34	38	....
48	96		25	25	27	29	31	35	....	....
48		96	25	25	28	30	32	36	....	....
60	96		25	25	30	32	37	....	....	....
60		96	25	26	31	....	....	....	....	....
84	96		26	27	....	....	....	....	....	....
84		96	27	28	....	....	....	....	....	....
Over 84 in. wide			28	30	....	....	....	....	....	....

All Bath Tub Sheets.....	16 oz.	14 oz.	12 oz.	10 oz
Per pound.....	$0.25	0.27	0 29	0.32

Bolt Copper, ⅜ inch diameter and over, per pound..... 25¢

Circles, over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats.

	Per pound.
14 ounce to square foot and heavier.....	29¢
12 ounce and up to 14 ounce to square foot.....	30¢
10 ounce and up to 12 ounce.....	32¢

Circles less than 8 inches diameter 5 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each.....	8¢
Tinning sheets on one side, 30 x 60 each.....	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each.	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each.....	10¢
Tinning sheets on one side, other sizes, per square foot.....	2½¢
For tinning both sides double the above prices.	

Planished Brass and Copper.

14 x 48.

14 and 16 oz. and heavier..31¢.	By the case...30¢ ₩ lb
12 oz. and lighter.....33¢.	By the case...32¢ ₩ lb

24 x 48 and 30 x 60.

14 and 16 oz. and heavier..44¢.	12 oz.....37¢ ₩ lb

Seamless Brass and Copper Tubes.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	39	35	32	31	30	29	26
15	13	40	35	33	32	31	30	27
16	14	41	36	34	33	32	31	27
17	15	42	37	35	32	33	32	28
18	16	44	38	36	34	33	32	29
19	17	45	39	37	36	35	34	31
20	18-19	46	41	39	38	37	36	33
21	20	48	43	41	40	39	38	36
22	21	50	44	42	41	40	39	38
23	22	52	46	44	43	42	41	41
24	23	55	48	46	45	43	42	43
25	24	58	51	48	47	46	45	47

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch.....	45¢
Plain, 5-16 inch.....	45¢
Plain, ¼ inch.....	60¢
Plain, 3-16 inch.....	$1.00
Plain, ⅛ inch.....	1.50
Fancy Tubing, Brass, to No. 20, inclusive.....	43¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list.....	25 @ ...%

Roll and Sheet Brass.

Discount from list..... 10 %

High Brass Rods.

Over 1 inch diameter..	29¢
¼ inch to 1 inch diameter, both inclusive.....	26¢
No. 8 and less than ¼ inch diameter.....	29¢
Smaller than No. 8.....	33¢

Hexagon, Octagon and Square, 2¢ ₩ lb advance over Round Rods.

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	6¼¢
"Bertha"	8¢

Zinc.

Duty; Sheet, 2½¢ ₩ lb.

600 lb casks.....	6½¢
Per lb	7½¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 3¢ ₩ lb.

American	4½¢
Bar.....	5 ¢
Pipe, subject to trade discount....	7 ¢
Tin-Lined Pipe, subject to trade discount.....	15¢
Block Tin Pipes, subject to trade discount.....	40¢
Sheet, subject to trade discount.....	7½¢

Solder.

½ @ ½ (Guaranteed)...	15 ¢
No. 1.....	12 ¢
Extra Wiping.....	11½¢ @ 12 ¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson.....	₩ lb 25 ¢
Hallett's.	" 21½¢

ALUMINUM.

Prices in Ingots.

$2.00 ₩ lb in lots of 1000 lb and over.
$2.25 ₩ lb in lots of 500 lb and over.
$2.50 ₩ lb in lots of 100 lb and over.

Prices Per Pound on Rolled Sheets.

(Brown & Sharpe, Standard Gauge.)

Wider than. ..... And including.....	2 in. 10 in.	10 in. 14 in.	14 in. 18 in.	18 in. 22 in.	22 in. 24 in.
Up to No. 20 inclusive...	$2.50	$2.60	$2.80	$3.00	$3.20
Nos. 21, 22, 23 and 24....	2.60	2.70	2.90	3 10	3.30
Nos. 25 and 26.....	2.70	2.80	3.00	3.20	3.40
Nos. 27 and 28.....	2.80	2.90	3.10	3.30	3.50

Sheets, thinner than No. 28 gauge and wider than 24 inches, special prices not less than $5 per pound.
Add 5c cents per pound for sheets cut to particular widths and lengths.
Sheets rolled to .001 in. and under, 50 cents per ounce.
Leaf in books, 20 cents per book; $2 per pack of 10 books, sheets 5 x 5 inches.

Aluminum Tubing.

From $4 per pound upward, according to size and thickness of walls.

Aluminum Castings.

From 50 cents upwards per pound extra over the cost of the metal in ingots, according to the number wanted, weight, the difficulty of casting, cost of patterns, &c.

Aluminum Wire in Coils.

(Brown & Sharpe, Standard Gauge.)

	Per lb
All numbers up to No. 14 (.064 in.) inclusive.....	$3.00
Nos. 15 (.05706 in.) to 22 (.02534 in.) inclusive....	3.25
Nos. 23 (.02571 in.) and 24 (.0201 in.) inclusive...	3.50
Nos. 25 (.0179 in.) and 26 (.01594 in.) inclusive....	3.75
Nos. 27 (.014195 in.) and 28 (.012641 in.) inclusive	4.00
Nos. 29 (.011257 in.) and 30 (.010025 in.) inclusive	4.25
No. 31 (.008928 in.).....	4.50
No. 32 (.00795 in.).....	4.75
No. 33 (.00708 in.).....	5.00
No. 34 (.00630 in.).....	5.25
No. 35 (.00561 in.).....	5.75
No. 36 (.00500 in.).....	6.25
No. 37 (.00445 in.).....	7.00
No. 38 (.003965 in.).....	8.50
No. 39 (.003531 in.).....	12.00
No. 40 (.003144 in.).....	16.00

Spooling, on 1-pound spools, 15 cents per pound extra
Spooling, on 10-pound spools, 5 cents per pound extra